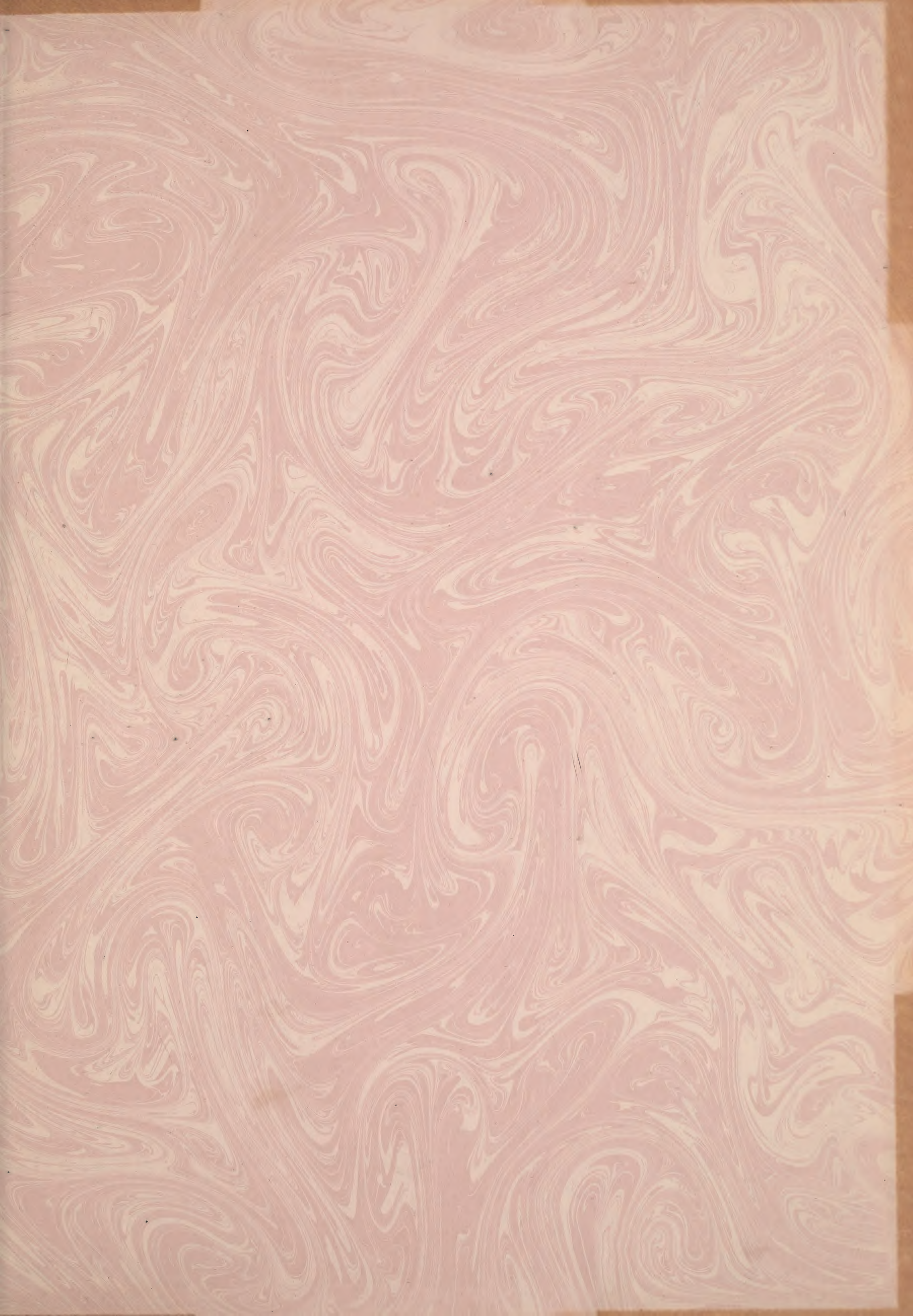






THE BIRDS OF AUSTRALIA

THE
BIRDS
OF
AUSTRALIA

BY
GREGORY M. MATHEWS
F.R.S.E.

MEMBER OF THE AUSTRALIAN ORNITHOLOGISTS' UNION
AND THE BRITISH ORNITHOLOGISTS' UNION
CORRESPONDING FELLOW OF THE AMERICAN ORNITHOLOGISTS' UNION

WITH HAND-COLOURED PLATES

VOLUME III.

WITHERBY & CO.
326 HIGH HOLBORN LONDON
1913-1914

CONTENTS

AND

LIST OF PLATES.

	PAGE
Order CHARADRIIFORMES	1
Genus MORINELLA	4
No. 157. EASTERN TURNSTONE, <i>Morinella interpres oahuensis</i> .	5
Plate 125 lettered <i>Morinella interpres</i> , to face . . .	5
Genus HÆMATOPUS	11
No. 158. PIED OYSTERCATCHER, <i>Hæmatopus ostralegus longirostris</i>	15
Plate 126 lettered <i>Hæmatopus longirostris</i> , to face . .	15
No. 159. NORTH - WESTERN PIED OYSTERCATCHER, <i>Hæmatopus</i>	
<i>ostralegus picatus</i>	23
No. 160. EAST AUSTRALIAN BLACK OYSTERCATCHER, <i>Hæmatopus</i>	
<i>niger fuliginosus</i>	24
No. 161. WESTRALIAN BLACK OYSTERCATCHER, <i>Hæmatopus niger</i>	
<i>bernieri</i>	29
Plate 127 lettered <i>Hæmatopus fuliginosus</i> , to face . .	29
No. 162. BARE-EYED BLACK OYSTERCATCHER, <i>Hæmatopus niger</i>	
<i>opthalmicus</i>	30
Genus ERYTHROGONYS	31
No. 163. RED-KNEED DOTTEREL, <i>Erythrogonys cinctus cinctus</i> .	35
No. 164. WESTERN RED-KNEED DOTTEREL, <i>Erythrogonys cinctus</i>	
<i>mixtus</i>	38
Plate 128 lettered <i>Erythrogonys cinctus</i> , to face . . .	38
Genus LOBIBYX	40
No. 165. SPUR-WINGED PLOVER, <i>Lobibyx novæ-hollandiæ</i> . .	44
Plate 129 lettered <i>Lobibyx lobatus</i> , to face . . .	44

THE BIRDS OF AUSTRALIA.

	PAGE
Genus LOBIBYX— <i>continued</i> .	
No. 166. LESSER MASKED PLOVER, <i>Lobibyx miles personatus</i> .	52
Plate 130 lettered <i>Lobibyx miles</i> , to face	52
No. 167. EASTERN MASKED PLOVER, <i>Lobibyx miles harterti</i> .	55
Genus ZONIFER	57
No. 168. BLACK-BREASTED PLOVER, <i>Zonifer tricolor tricolor</i> .	59
No. 169. WESTERN BLACK-BREASTED PLOVER, <i>Zonifer tricolor</i> <i>gwendolencæ</i>	65
Plate 131 lettered <i>Zonifer tricolor</i> , to face	65
Genus SQUATAROLA	67
No. 170. EASTERN GREY PLOVER, <i>Squatarola squatarola hypomelus</i>	69
Plate 132 lettered <i>Squatarola squatarola</i> , to face	69
Genus PLUVIALIS	73
No. 171. EASTERN GOLDEN PLOVER, <i>Pluvialis dominicus fulvus</i> .	74
Plate 133 lettered <i>Charadrius fulvus</i> , to face	74
Genus CIRREPIDESMUS	81
No. 172. DOUBLE-BANDED DOTTEREL, <i>Cirrepidesmus bicinctus</i> .	86
Plate 134 lettered <i>Charadrius bicinctus</i> , to face	86
No. 173. MONGOLIAN SAND-DOTTEREL, <i>Cirrepidesmus mongolus</i> <i>mongolus</i>	92
Plate 135 lettered <i>Charadrius mongolus</i> , to face	92
Genus PAGOA	98
No. 174. LARGE SAND-DOTTEREL, <i>Pagoa geoffroyi</i>	99
Plate 136 lettered <i>Charadrius geoffroyi</i> , to face	99
Genus EUPODA	103
No. 175. ORIENTAL DOTTEREL, <i>Eupoda vereda</i>	104
Plate 137 lettered <i>Charadrius veredus</i> , to face	104
Genus LEUCOPOLIUS	108
No. 176. RED-CAPPED DOTTEREL, <i>Leucopoliuss ruficapillus rufi-</i> <i>capillus</i>	117
No. 177. PALE RED-CAPPED DOTTEREL, <i>Leucopoliuss ruficapillus</i> <i>tormenti</i>	121
Plate 138 lettered <i>Charadrius ruficapillus</i> , to face	121

CONTENTS.

	PAGE
Genus CHARADRIUS	123
No. 178. HOODED DOTTEREL, <i>Charadrius cucullatus cucullatus</i> .	128
Plate 139 lettered <i>Charadrius cucullatus</i> , to face .	128
No. 179. WESTERN HOODED DOTTEREL, <i>Charadrius cucullatus</i> <i>tregellasi</i>	133
Genus ELSEYA	135
No. 180. BLACK-FRONTED DOTTEREL, <i>Elseya melanops melanops</i> .	137
Plate 140 lettered <i>Charadrius melanops</i> , to face .	137
No. 181. WESTERN BLACK-FRONTED DOTTEREL, <i>Elseya melanops</i> <i>russata</i>	141
Genus HYPsIBATES	144
No. 182. WHITE-HEADED STILT, <i>Hypsibates leucocephalus leuco-</i> <i>cephalus</i>	146
No. 183. NORTHERN WHITE-HEADED STILT, <i>Hypsibates leucoce-</i> <i>phalus assimilis</i>	151
Plate 141 lettered <i>Hypsibates leucocephalus</i> , to face .	151
Genus CLADORHYNCHUS	153
No. 184. BANDED STILT, <i>Cladorhynchus leucocephalus</i> .	154
Plate 142 lettered <i>Cladorhynchus leucocephalus</i> , to face .	154
Genus RECURVIROSTRA	158
No. 185. EASTERN RED-NECKED AVOCET, <i>Recurvirostra novæ-</i> <i>hollandiæ novæ-hollandiæ</i>	160
No. 186. WESTERN RED-NECKED AVOCET, <i>Recurvirostra novæ-</i> <i>hollandiæ stalkerii</i>	163
Plate 143 lettered <i>Recurvirostra novæ-hollandiæ</i> , to face .	163
Family SCOLOPACIDÆ	165
Genus NUMENIUS	167
No. 187. AUSTRALIAN CURLEW, <i>Numenius cyanopus</i> .	170
Plate 144 lettered <i>Numenius cyanopus</i> , to face .	170
Genus PHÆOPUS	175
No. 188. AUSTRALIAN WHIMBREL, <i>Phæopus phæopus variegatus</i> .	176
Plate 145 lettered <i>Numenius variegatus</i> , to face .	176

THE BIRDS OF AUSTRALIA.

	PAGE
Genus MESOSCOLOPAX	179
No. 189. LITTLE WHIMBREL, <i>Mesoscolopax minutus</i>	180
Plate 146 lettered <i>Numenius minutus</i> , to face	180
Genus LIMOSA	184
No. 190. EASTERN BLACK-TAILED GODWIT, <i>Limosa limosa melanuroides</i>	187
Plate 147 lettered <i>Limosa melanuroides</i> , to face	187
Genus VETOLA	191
No. 191. EASTERN BARRED-RUMPED GODWIT, <i>Vetola lapponica baueri</i>	192
Plate 148 lettered <i>Limosa baueri</i> , to face	192
Genus ILIORNIS	197
No. 192. LITTLE GREENSHANK, <i>Iliornis stagnatilis horsfieldi</i>	200
Plate 149 lettered <i>Tringa stagnatilis</i> , to face	200
Genus TRINGA	202
EASTERN GREEN SANDPIPER, <i>Tringa ocropus assami</i>	203
Plate 150 lettered <i>Tringa ocropus</i> , to face	203
Genus HETEROSCELUS	206
No. 193. GREY-RUMPED SANDPIPER, <i>Heteroscelus incanus brevipes</i>	207
Plate 151 lettered <i>Tringa brevipes</i> , to face	207
No. 194. WANDERING TATTLER, <i>Heteroscelus incanus incanus</i>	211
Plate 152 lettered <i>Tringa incanus</i> , to face	211
Genus ACTITIS	214
No. 195. EASTERN COMMON SANDPIPER, <i>Actitis hypoleucos aurita</i>	216
Plate No. 153 lettered <i>Tringa hypoleucus</i> , to face	216
Genus XENUS	220
No. 196. EASTERN TEREK SANDPIPER, <i>Xenus cinereus javanicus</i>	221
Plate 154 lettered <i>Tringa cinerea</i> , to face	221
Genus GLOTTIS	224
No. 197. EASTERN GREENSHANK, <i>Glottis nebularius glottoides</i>	225
Plate 155 lettered <i>Tringa nebularius</i> , to face	225

CONTENTS.

	PAGE
Genus RHYACOPHILUS	229
No. 198. EASTERN WOOD-SANDPIPER, <i>Rhyacophilus glareola affinis</i>	230
Plate 156 lettered <i>Tringa glareola</i> , to face	230
Genus BARTRAMIA	233
No. 199. LONG-TAILED SANDPIPER, <i>Bartramia longicauda</i>	234
Plate 157 lettered <i>Bartramia longicauda</i> , to face	234
Genus ARENARIA	240
No. 200. EASTERN SANDERLING, <i>Arenaria leucophæa tridactyla</i>	241
Plate 158 lettered <i>Arenaria leucophæa</i> , to face	241
Genus PISOBIA	245
No. 201. LITTLE STINT, <i>Pisobia minuta ruficollis</i>	247
Plates 159 and 160 lettered <i>Pisobia ruficollis</i> , to face 247 and 251	
No. 202. LONG-TOED STINT, <i>Pisobia damacensis</i>	251
Plates 159 and 160 lettered <i>Pisobia damacensis</i> , to face 247 and 251	
Genus LIMNOCINCLUS	254
No. 203. SHARP-TAILED STINT, <i>Limnocinclus acuminatus</i>	255
Plate 161 lettered <i>Erolia acuminata</i> , to face	255
Genus EROLIA	264
No. 204. EASTERN CURLEW-SANDPIPER, <i>Erolia ferruginea chinensis</i>	266
Plate 162 lettered <i>Erolia ferruginea</i> , to face	266
Genus CANUTUS	269
No. 205. EASTERN KNOT, <i>Canutus canutus rogersi</i>	270
Plate 163 lettered <i>Canutus canutus</i> , to face	270
Genus ANTELIOTRINGA	274
No. 206. GREAT KNOT, <i>Anteliotringa tenuirostris</i>	275
Plate 164 lettered <i>Canutus magnus</i> , to face	275
Genus LIMICOLA	278
No. 207. EASTERN BROAD-BILLED SANDPIPER, <i>Limicola falcinellus</i>	
<i>sibirica</i>	279
Plate 165 lettered <i>Limicola sibirica</i> , to face	279
Genus DITELMATIAS	282

THE BIRDS OF AUSTRALIA.

	PAGE
SNIPES and WOODCOCKS	283
[<i>Pagoa geoffroyi</i> (note on)]	295
No. 208. EAST AUSTRALIAN SNIPE, <i>Ditelmatis hardwickii</i>	296
Plate 166 lettered <i>Gallinago australis</i> , to face	296
Genus SUBSPILURA	300
No. 209. LARGER PIN-TAILED SNIPE, <i>Subspilura megala</i>	302
Plate 167 lettered <i>Gallinago megala</i> , to face	302
Genus ROSTRATULA	306
No. 210. AUSTRALIAN PAINTED SNIPE, <i>Rostratula australis</i>	308
Plate 168 lettered <i>Rostratula australis</i> , to face	308
Family JACANIDÆ	312
Genus IREDIPARRA	314
No. 211. EASTERN COMB-CRESTED JACANA, <i>Irediparra gallinacea novæ-hollandiæ</i>	315
No. 212. WESTERN COMB-CRESTED JACANA, <i>Irediparra gallinacea rothschildi</i>	318
Plate 169 lettered <i>Irediparra novæhollandiæ</i> , to face	318
Family GLAREOLIDÆ	320
Genus STILTIA	323
No. 213. AUSTRALIAN PRATINCOLE, <i>Stiltia isabella</i>	324
Plate 170 lettered <i>Stiltia isabella</i> , to face	324
Genus GLAREOLA	329
No. 214. ORIENTAL PRATINCOLE, <i>Glareola pratincola maldivarum</i>	330
Plate 171 lettered <i>Trachelia maldivarum</i> , to face	330
Genus PELTOHYAS	335
No. 215. EASTERN DOTTEREL, <i>Peltohyas australis australis</i>	337
No. 216. WESTERN DOTTEREL, <i>Peltohyas australis whitlocki</i>	339
Plate 172 lettered <i>Charadrius australis</i> , to face	339
Family BURHINIDÆ	342

CONTENTS.

	PAGE
Genus BURHINUS	344
No. 217. STONE-PLOVER, <i>Burhinus magnirostris magnirostris</i> .	345
Plate 173 lettered <i>Burhinus magnirostris</i> , to face . . .	345
No. 218. LITTLE STONE-PLOVER, <i>Burhinus magnirostris rufescens</i>	353
No. 219. NORTHERN STONE-PLOVER, <i>Burhinus magnirostris ramsayi</i>	355
No. 220. WESTERN STONE-PLOVER, <i>Burhinus magnirostris broomei</i>	356
Genus ORTHORHAMPHUS	357
No. 221. AUSTRALIAN LONG-BILLED PLOVER, <i>Orthorhamphus</i>	
<i>magnirostris neglectus</i>	358
Plate 174 lettered <i>Esacus magnirostris</i> , to face . . .	358
Genus AUSTROTIS	361
No. 222. EASTERN BUSTARD, <i>Austrotis australis australis</i> . .	363
No. 223. WESTERN BUSTARD, <i>Austrotis australis derbyi</i> . .	368
Plate 175 lettered <i>Choriotis australis</i> , to face . . .	368
Genus MATHEWSIA	371
No. 224. EAST AUSTRALIAN CRANE, <i>Mathewsia rubicunda rubi-</i>	
<i>cunda</i>	373
No. 225. WEST AUSTRALIAN CRANE, <i>Mathewsia rubicunda argentea</i>	376
Plate 176 lettered <i>Mathewsia rubicunda</i> , to face . . .	376
Genus THRESKIORNIS	378
No. 226. WHITE IBIS, <i>Threskiornis molucca strictipennis</i> . .	380
Plate 177 lettered <i>Ibis molucca</i> , to face	380
Genus CARPHIBIS	385
No. 227. STRAW-NECKED IBIS, <i>Carphibis spinicollis</i> . . .	386
Plate 178 lettered <i>Carphibis spinicollis</i> , to face . . .	386
Genus PLEGADIS	392
No. 228. AUSTRALIAN GLOSSY IBIS, <i>Plegadis falcinellus peregrinus</i>	394
Plate 179 lettered <i>Egatheus falcinellus</i> , to face . . .	394
Genus SPATHERODIA	398
No. 229. BLACK-BILLED SPOONBILL, <i>Spaththerodia regia</i> . .	400
Plate 180 lettered <i>Platalea regia</i> , to face	400
Genus PLATIBIS	403
No. 230. YELLOW-BILLED SPOONBILL, <i>Platibis flavipes</i> . .	404
Plate 181 lettered <i>Platibis flavipes</i> , to face	404

THE BIRDS OF AUSTRALIA.

	PAGE
Genus XENORHYNCHUS	407
No. 231. BLACK-NECKED STORK, <i>Xenorhynchus asiaticus australis</i>	408
Plate 182 lettered <i>Mycteria australis</i> , to face	408
Genus ARDEA	412
No. 232. EASTERN GREY HERON, <i>Ardea cinerea rectirostris</i>	414
Plate 183 lettered <i>Ardea rectirostris</i> , to face	414
Genus TYPHON	418
No. 233. GREAT-BILLED HERON, <i>Typhon sumatrana mathewsæ</i>	419
Plate 184 lettered <i>Ardea mathewsæ</i> , to face	419
Genus EGRETТА	422
No. 234. LESSER EGRET, <i>Egretta garzetta immaculata</i> .	424
Plate 185 lettered <i>Egretta immaculata</i> , to face	424
Genus MESOPHOYX	426
No. 235. PLUMED EGRET, <i>Mesophoyx intermedia plumifera</i>	427
Plate 186 lettered <i>Egretta plumifera</i> , to face	427
Genus HERODIAS	430
No. 236. WHITE EGRET, <i>Herodias alba syrmatophora</i>	431
Plate 187 lettered <i>Egretta neglecta</i> , to face	431
Genus NOTOPHOYX	436
No. 237. WHITE-FRONTED HERON, <i>Notophoyx novæ-hollandiæ</i>	438
Plate 188 lettered <i>Notophoyx novæ-hollandiæ</i> , to face . .	438
Genus MYOLA	441
No. 238. WHITE-NECKED HERON, <i>Myola pacifica</i>	442
Plate 189 lettered <i>Notophoyx pacifica</i> , to face	442
Genus TONOPHOYX	445
No. 239. PIED EGRET, <i>Tonophoyx aruensis flavirostris</i>	446
Plate 190 lettered <i>Notophoyx flavirostris</i> , to face. . .	446
Genus DEMIGRETТА	448
No. 240. BLUE REEF-HERON, <i>Demigretta matook cooktowni</i>	450
Plate 191 lettered <i>Demigretta tormenti</i> , to face	450
No. 241. WHITE REEF-HERON, <i>Demigretta greyi</i>	456
Plate 192 lettered <i>Demigretta greyi</i> , to face	456

CONTENTS.

	PAGE
Genus NYCTICORAX	458
No. 242. NIGHT-HERON, <i>Nycticorax caledonicus hilli</i> . . .	459
Plate 193 lettered <i>Nycticorax australasiæ</i> , to face . . .	459
Genus BUTORIDES	464
No. 243. LITTLE MANGROVE-BITTERN, <i>Butorides striata stagnatilis</i>	466
Plate 194 lettered <i>Butorides stagnatilis</i> , to face . . .	466
No. 244. LARGE-BILLED MANGROVE-BITTERN, <i>Butorides striata</i>	
<i>macrorhyncha</i>	468
Plate 195 lettered <i>Butorides macrorhynchus</i> , to face . . .	468
No. 245. NORTHERN MANGROVE-BITTERN, <i>Butorides striata littleri</i>	470
No. 246. RED MANGROVE-BITTERN, <i>Butorides rogersi</i> . . .	471
Plate 196 lettered <i>Butorides rogersi</i> , to face . . .	471
Genus IXOBRYCHUS	472
No. 247. LITTLE BITTERN, <i>Ixobrychus minutus dubius</i> . . .	473
Plate 197 lettered <i>Ixobrychus alisteri</i> , to face . . .	473
Genus DUPETOR	476
No. 248. YELLOW-NECKED MANGROVE-BITTERN, <i>Dupetor flavicollis</i>	
<i>gouldi</i>	479
Plate 198 lettered <i>Ardeiralla gouldi</i> , to face . . .	479
No. 249. NORTHERN YELLOW-NECKED MANGROVE-BITTERN,	
<i>Dupetor flavicollis olivei</i>	482
Genus BOTAURUS	484
No. 250. EASTERN AUSTRALIAN BITTERN, <i>Botaurus poiciloptilus</i>	
<i>poiciloptilus</i>	486
No. 251. WEST AUSTRALIAN BITTERN, <i>Botaurus poiciloptilus</i>	
<i>westralensis</i>	489
Plate 199 lettered <i>Botaurus westralensis</i> , to face . . .	489

PREFACE.

THERE is little to record, yet much of great importance to Australian ornithologists has happened during the publication of this, the third volume of my work.

The "tiresome" matter of nomenclature has been much discussed by the zoological workers of the world, and it is to be hoped that the conclusions reached will enable all of us to settle such matters easily and finally.

A Committee of the Royal Australasian Ornithologists' Union has published a *Checklist*, which, on account of the basic principles being bad, has been repudiated by the progressive Australian ornithologists, and justly condemned by unprejudiced extra-Australian workers as only capable of causing confusion. I have since prepared a List based upon the International Rules governing Nomenclature, and have included all the synonymy known to me, so that Australian workers should be at no disadvantage as compared with those with more access to literature. It is important that local workers should possess such a list, as no one at the present time can do lasting work without having a knowledge of his contemporaries' labours as well as a guide to preceding records.

I have to acknowledge that each year I am receiving more aid from local workers with regard to the life-histories of birds, and I have endeavoured to supply my co-operating friends with the result of my labours as regards the systematic study of the birds of Australia. As an instance of the advances made in our knowledge may be cited the case of the Great White Heron of Australia. The results of systematic study of this group were given by Sharpe in the *Catalogue* of the Birds in the British Museum, Vol. XXVI. The researches of Messrs. Cole and Mattingley have shown that those results were erroneous, yet without the diligent application made by those gentlemen, it is almost certain that Sharpe's deductions would have been endorsed.

In the Introduction to my *List of the Birds of Australia*, I made note of the peculiar discoveries that might be made in Australia with regard to "island faunas" on that continent. I instanced the isolation

THE BIRDS OF AUSTRALIA.

of the Mallee Country of Victoria and South Australia, the peculiarities of the Bellenden Ker Range, and the extraordinary Onslow (West Australia) bird-life, and ventured to prophesy the discovery of many more such in the great extent of unknown Australia. While that List was in the press, through the enthusiasm of Dr. W. Macgillivray, another "island"—which promises to be one of the, if not *the*, most interesting discovery of recent Australian ornithology—has been brought to light. I refer to the country around Pascoe River, North Queensland, where Dr. Macgillivray sent his collector, Mr. J. MacLennan, and which has yielded the most unexpected and extraordinary results. For the receipt of a Parrot of the genus *Geoffroyus* accompanied by another of the genus *Eclectus* cannot be regarded as anything else save extraordinary. These two genera are composed of conspicuous birds not otherwise represented on the Australian continent and which do not occur at Cape York. Their absence from Cape York, the nearest point to New Guinea, emphasises the "island" character of the Pascoe River district, and many more delightful discoveries may be anticipated. I have also put on record the receipt of a species of *Globicera*, a large Fruit-Pigeon from North Queensland—another genus hitherto unrepresented in the Australian avifauna. I have described *Spiloglaux boweri* from the Bowyer-Bower collection. This is a bird quite unlike the almost universally distributed Australian species *S. boobook*, and resembles a species from the islands off the coast of New Guinea.

I am here making note of these, to urge upon Australians the immense possibilities open in the study of their avifauna, and would once again draw attention to the wonderful work being accomplished by Captain S. A. White. As most Australians know, Captain White has made collections throughout South Australia, working out the distribution of the avifauna in a most skilful manner. He has made lengthy and expensive journeys into Eyre's Peninsula, worked through Kangaroo Island, and investigated the Gawler Ranges, as well as minor trips. I am remarking on these in this place, as though a few scant field-notes have appeared in the *Emu*, the full value of Captain White's investigations will not be fully shown until the Passerine birds are treated in this work, when the distribution of many species will be clearly expressed by means of Captain White's specimens. Captain White's latest expedition on this account must be here mentioned, as he has during the past year penetrated right into the interior of Australia and made collections in the Macdonald Ranges. These specimens will confirm and amplify the results of the famous Horn Expedition, and elucidate many of the problems of distribution indicated by the fewer specimens brought back by

PREFACE.

the members of the Horn Expedition. The full results of this important incursion by Captain White will not be completely known until the Passerine birds are worked at in a monographic manner, as above noted, so that it is important that a full meed of the recognition due to Captain White for this arduous journey should be meted at this, the first opportunity. The difficulties attendant to such an incursion as this last one cannot be easily measured, as Captain White's expedition was not a large one, but simply an ornithological reconnaissance made in face of really difficult circumstances. The merest glance at the map will show the distance travelled, while readers of the Horn Expedition Reports will understand the wild and not easily travelled nature of the country traversed. Though it is not in the power of every Australian ornithologist to emulate Captain White's efforts, I would emphasise the necessity of each worker thoroughly investigating the field that lies at his door.

Another instance that can be cited in this direction is that of Mr. F. L. Berney, whose articles, contributed to the *Emu* on his own station bird-life, are full of the most valuable observations; and it will be at once noted that in this volume many of the best accounts of the birds treated come from his pen. The Victorian ornithologists are always making good reports, but I find scant records from New South Wales. Dr. W. Macgillivray has already been noted as the fortunate ornithologist to make the Pascoe River historical in Australian avifaunal records, and I have also to acknowledge the gift from him of a fine collection made in the Normanton district, thereby providing material from the type-localities of Castelnau and Ramsay's species as well as some of Diggles's forms.

All the friends whose co-operation I have been delighted to acknowledge in the prefaces to the two previous volumes have continued their aid, and some new ones, such as Dr. C. E. Thorpe and Mr. Herbert E. Purnell, need mention for their donations of rare specimens. In the forefront of my old friends, in addition to Captain White and Dr. Macgillivray, Messrs. Tom Carter, H. L. White, Charles Belcher, and A. H. Mattingley must once more be recognised on account of the importance of their contributions.

G. M. M.

ERRATUM.

The first paragraph on page 347 has been transposed, and does not refer to the species under which it is placed: it should be deleted.

ORDER X.—CHARADRIIFORMES.

It is somewhat difficult to give a concise definition of the birds comprised in this Order. So few workers have ventured to discuss the affinities of the component parts, while still fewer have dealt carefully with the relationships as a whole, that really little is known in this connection. It has been generally conceded that the *Charadriiformes* are nearest related to the *Lariformes*, while they have also alliances with the *Ralliformes*, but beyond that not much can be said.

Sharpe in 1891 reviewed the recent attempts to classify birds, and glancing through that summary I find them generally placed near the *Lariformes*; but very different sub-divisions are accepted by each individual writer.

The latest authoritative systematic account of the Order is contained in the *Catalogue* of the Birds in the British Museum, Vol. XXIV. This was completed as long ago as 1896, and as the method then adopted was utilised without alteration in the *Handlist of Birds* by Sharpe, it necessarily follows that it must be used as a basis in the present work.

In my "Reference List," in deference to the lumping policy I there adopted, I used genera of wide limits and accepted the huge family *Charadriidæ* proposed by Sharpe. My studies in the *Procellariiformes* and *Lariformes* indicated disagreement with the higher groupings in use in those Orders, but I did not make any alterations—simply pointing out the apparent discrepancies I noted in their treatment in the *Catalogue* of the Birds in the British Museum.

In the present Order, while generally adhering to that classification, I feel compelled to make use of different groupings and to give my reasons for not accepting the classification in the *Catalogue* in its entirety. These will be detailed under the genera affected.

It should be noted that this group has offered such difficulty, that the only monograph yet written is that in the *Catalogue*. Previous to that two writers had specially interested themselves in the study of these birds, viz. Harting and Seebohm. While the first-named contented himself with the rehabilitation of little-known species, the latter dealt with the birds from the geographical standpoint. This *Geographical Distribution of the Charadriidæ*

THE BIRDS OF AUSTRALIA.

is a most important contribution to the subject, but is handicapped by the presence of peculiar nomenclatural rulings and the author's wide generic limits. The latter were based entirely on colour, but in many cases unreasonable characters were utilised, and consequently confusion resulted. Seebohm was one of the first, if not *the* first, ornithologist to use the character of nestling-plumage in systematic work, but was so prejudiced against the users of so-called structural features, that he omitted to take into consideration the form of the bill and feet of the nestlings as a guide to accurate classification. I find that, in agreement with Seebohm, there appears to be a similarity in the structural characters correlative with the colour of the plumage, but that, if this be natural, it is emphasized in the nestling.

Seebohm's progressive methods, combined with his (almost) rudeness to his fellow-workers, did not gain for his work the appreciation it deserved from British ornithologists. Yet there is much of great value in his book, and it is well worthy of serious study at the present time. The higher groupings advocated by Seebohm are now inadmissible, so that they scarcely call for criticism.

In the British Museum *Catalogue*, Sharpe introduced a novel classification in this Order, admitting seven sub-Orders, viz. *Chionides*, *Attagides*, *Charadrii*, *Parræ*, *Cursorii*, *Ædicnemi*, and *Otides*. The first two sub-Orders do not concern Australian students; the last four will be treated later.

The sub-Order *Charadrii* simply contained the one family *Charadriidæ*, which however was sub-divided into ten subfamilies, thus: *Arenariinæ*, *Hæmatopodinæ*, *Lobivanellinæ*, *Charadriinæ*, *Peltohyatinæ*, *Himantopodinæ*, *Ibidorhynchinæ*, *Totaninæ*, *Scolopacinæ*, and *Phalaropinæ*.

The majority of previous systematists had admitted the family *Scolopacidæ* as distinct from the family *Charadriidæ*, more often other groups intervening.

My own studies have led me to suggest seven groups as worthy of family rank, viz. *Morinellidæ* (= *Arenariinæ* Sharpe), *Hæmatopodidæ* (= *Hæmatopodinæ* Sharpe), *Charadriidæ* (= *Lobivanellinæ* + *Charadriinæ* Sharpe), *Recurvirostridæ* (= *Himantopodinæ* Sharpe), *Ibidorhynchidæ* (= *Ibidorhynchinæ* Sharpe), *Scolopacidæ* (= *Totaninæ* + *Scolopacinæ* Sharpe), and *Phalaropidæ* (= *Phalaropinæ* Sharpe).

The *Charadriidæ*, mihi, I would divide into two subfamilies, *Vanellinæ* and *Charadriinæ*; while the *Scolopacidæ*, mihi, may be separated into two subfamilies, *Scolopacinæ* and *Tringinæ*. My reasons for so doing will be fully given under the groups named.

It is pleasing to note that in so valuing my groups I find myself in fair agreement (in outline) with the classification in use in the American Ornithologists' Union's *Checklist*, 3rd ed. I had calculated my group-values from a

CHARADRIIFORMES.

study of the birds before consulting that work, and am glad to note there is much similarity, though the general systems followed differ.

One of the most interesting problems in connection with bird-life is the geographical distribution of the forms united in this Order; thus while some forms of a genus are migratory others closely allied are sedentary. Moreover, migratory, when used in connection with these birds, means long-distance travelling. All the sedentary forms make sporadic movements according to the seasons, but the migratory forms breed towards and in the arctic regions, and wander southwards almost to the antarctic circle; these migratory forms haunt the sea-shores in their southern range, though not restricted to such localities while breeding. Many genera and species associate together while "wintering" in the south; these have different plumages during the breeding-season, and the researches of my collector, Mr. J. P. Rogers, lead to the following conclusions: They arrive in Australia in flocks composed of individuals of the same species in winter-plumage, in poor condition; these flocks break up, and varied gatherings of different species are met with during their stay in Australia. At the approach of their breeding-season they once more reassociate into flocks of one species, and take on their summer-plumage, often before they leave Australia. When they do this they are fat and in good condition. Those which from causes we do not understand do not get fat, remain in Australia in their winter-plumage during the breeding-season. Possibly these become fit in the succeeding season.

FAMILY—MORINELLIDÆ.

GENUS—MORINELLA.

- MORINELLA Meyer und Wolf, Taschenb. d. Vögel, p. 383
 (footnote), 1810 Type *M. interpres*.
 (Also spelt *Morinellus* Gray, List. Gen. Birds, p. 70, 1840.)
Strepsilas Illiger, Prodröm, p. 263, 1811 Type *M. interpres*.
 (Also spelt *Stripsilas* Stephens, in Shaw's Gen. Zool.,
 Vol. XI., pt. II., p. 519, 1819.)
Arenaria Vieillot, Nouv. Dict. d'Hist. Nat., Vol. XXXIV.,
 p. 344, 1819 Type *M. interpres*.
Calobatus Lesson, Manuel d'Orn., Vol. II., p. 339,
 1828 Type *M. interpres*.
Cinclus Gray, List Gen. Birds, 2nd ed., p. 85, 1841 .. Type *M. interpres*.

SMALL Wading Birds with short, straight bill, long wings, and short and stout legs and feet. The bill is distinctive, being somewhat conical, almost straight or *very* slightly upturned, the culmen flattened. The nostrils are linear, situated near the base of the culmen, in a groove which extends nearly half the length of the bill. The wings are long and pointed, the first primary longest. The metatarsus, just exceeding the culmen in length, is transversely scutellated in front, reticulated behind. Hind toe well developed, the toes not connected or webbed at all.

I would point out that in the American Ornithologists' Union's *Checklist*, 3rd ed., p. 131, 1910, a family *Aphrízidæ* is admitted to include the genera *Arenaria* (= *Morinella*, mihi) and *Aphriza*. My family *Morinellidæ* is not equivalent to that family, as I do not admit the genus *Aphriza* as having a very close relationship with *Morinella*. It would seem that the prejudice of the presence of a well-formed hind-toe has been the means of associating these two genera. The bill in the genus *Aphriza*, however, is typically Pluvialine, and is quite unlike that of the genus *Morinella*. The presence or absence of a hind-toe in this Order does not seem to have as much systematic significance as in others. Thus we have *Squatarola* and *Pluvialis* associated together, though one has a minute hind-toe and the other lacks it. In the Vanelline birds the hind-toe is present in some genera, absent in others; but no systematist has yet claimed that this feature is worthy of more than generic recognition.



J. G. Keulemans del

Witherby & Co

$\frac{2}{3}$
MORINELLA INTERPRES.
(*TURNSTONE*).

MORINELLA INTERPRES OAHUENSIS.

EASTERN TURNSTONE.

(PLATE 125.)*

TRINGA OAHUENSIS Bloxham, Voy. "Blonde" Sandwich Isl., p. 251, 1826; Sandwich Islands.

Tringa oahuensis Bloxham, Voy. "Blonde," Sandwich Isl., p. 251, 1826.

Charadrius cinclus Pallas, Zoogr. Rosso-Asiat., Vol. II., p. 148, 1827 (Siberia).

Streptilas interpres Gould, Birds Austr., Vol. VI., pl. 39, 1848; Middendorff, Sibirische Reise, p. 213, 1851; Gould, Handb. Birds Austr., Vol. II., p. 269, 1865; Swinhoe Ibis 1870, p. 361; Buller, Birds New Zeal., p. 221, 1873; Ramsay, Proc. Zool. Soc. (Lond.) 1877, p. 338, 1878; Forbes, Proc. Zool. Soc. (Lond.) 1878, p. 127, 1879; Seebohm, Geogr. Distr. Charadr., p. 410, 1887; Buller, Birds New Zeal., 2nd ed., Vol. II., p. 14, 1888; Ramsay, Tab. List Austr. Birds, p. 20, 1888; Seebohm, Ibis 1888, p. 348; Legge, Proc. Austr. Assoc. Ad. Sci., Vol. IV., p. 957, 1892; La Touche, Ibis 1892, p. 497; Rothschild, Av. Laysan, p. 13, 1893.

Cinclus interpres Gray, Cat. Birds Trop. Isl. Pac. Ocean, p. 48, 1859.

Morinella interpres Stejneger, Proc. U.S. Nat. Mus., Vol. V., p. 34, 1882.

Arenaria interpres id., Bull. U.S. Nat. Mus., No. 29, p. 102, 1885; Sharpe, Cat. Birds Brit. Mus., Vol. XXIV., p. 92, 1896; North, Birds County Cumberl., p. 109, 1898; Palmer, Fur Seals and Isl. Pac. Ocean, pt. III., p. 410, 1899; Hall, Key Birds Austr., p. 80, 1899; Rothschild, Av. Laysan, p. 259, 1900; Hutton, Trans. New Zeal. Inst. 1900, p. 255, 1901; Campbell, Nests and Eggs Austr. Birds, p. 774, 1901; Carter, Emu, Vol. III., p. 175, 1904; Hall, Key Birds Austr., 2nd ed., p. 80, 1906; Mathews, Handl. Birds Austral., p. 23, 1908; Ogilvie-Grant, Ibis 1910, p. 184; Littler, Handb. Birds Tasm., p. 120, 1910; Campbell and White, Emu, Vol. X., p. 198, 1910.

Arenaria interpres interpres, A.O.U. Checklist, 3rd ed., p. 131, 1910.

Morinella interpres interpres Mathews, Nov. Zool., Vol. XVIII., p. 213, 1912.

DISTRIBUTION. Eastern Siberia to Alaska, wandering to Australia in the non-breeding season.

Adult male, in breeding-plumage. Lores, fore-part of crown, sides of crown, and sides of neck white like the lower-back and upper tail-coverts, as also the throat, middle of breast, abdomen, under tail-coverts, axillaries, and under wing-coverts; forehead black with

* The Plate is lettered *Morinella interpres*.

THE BIRDS OF AUSTRALIA.

white fringes to the feathers ; a black line in front of the eye joined to a black patch on the sides of the face which extends in a line on to the sides of the neck and is continued in a large space of black round the lower-throat and sides of breast ; crown of the head, the feathers fringed with white, giving a streaked appearance ; hind-neck white, the feathers tipped with brown and buff ; a black spot on each side of the nape ; the feathers of the mantle white, tipped with chestnut and a small black elongated spot ; some of the feathers of the back and scapulars are chestnut tipped with black, while others are black tipped with chestnut ; rump dark brown ; tail mostly white with a broad subterminal black band, the outermost pair of feathers white with the exception of a brown spot on the inner web near the tip ; lesser upper wing-coverts dark brown, some of the innermost white, those on the outer edge white with a subterminal brown spot ; bastard-wing and outer median coverts brown, the inner ones for the most part chestnut ; greater coverts brown margined and tipped with white ; primary-coverts and primary-quills brown, the latter paler brown on the inner webs, with white shafts and white on the outer webs towards the base ; secondaries for the most part brown margined and tipped with white, the innermost brown varied with chestnut and white, some of the feathers pure white ; bill black, eyes brown, feet red, joints brown. Total length 225 mm. ; culmen 25, wing 155, tail 61, tarsus 24.

Adult female, in breeding-plumage. Similar to the male but with more black on the mantle and less chestnut ; the feathers on the crown of the head black margined with brown ; the white on the sides of the head and fore-part of crown not so clearly defined.

Adult, in winter-plumage. Differs from the breeding-plumage in the entire absence of chestnut on the upper-surface where it is replaced by dark brown, or black, with pale brown margins to the feathers ; head and hind-neck dusky-brown more or less intermixed or streaked with white like the ear-coverts and sides of face, the feathers on the sides of the upper-breast very similar.

Immature. Upper-parts dark brown with paler brown edges to the feathers of the scapulars and upper wing-coverts ; entire head, sides of face, hind-neck and sides of neck dusky brown becoming black on the fore-neck and sides of breast, where the feathers are more or less edged with white.

Nest. A slight depression, sometimes lined with grass.

Eggs. Clutch, four. Ground-colour pale green, marked all over, but more on the larger end, with irregular markings of olive-brown and lavender ; axis 40-43 mm., diameter 30.

Breeding-season. June and July (Middendorff, East Siberia).

My collector, Mr. J. P. Rogers, found this bird in small flocks at Point Torment, North-west Australia, in December, 1910 ; they were rare in January, February, and March of the following year. He also reports them as rare near Derby. I have skins obtained at Roebuck Bay, North-west Australia, in November, 1895, and at Richmond River, New South Wales, in May, 1892. The bird in the foreground of the plate is a female, collected on Rotnest Island, West Australia, on August 12th, 1903.

Mr. Tom Carter tells me that he found it a common species on the beach in North-west Australia, especially in the summer months, but odd birds could be seen all the year round. He also found it at Albany in South-west Australia.

EASTERN TURNSTONE.

Captain S. A. White writes that he has observed and collected specimens of this bird on the north coast of Queensland, but never saw them in southern parts of Australia. Some of the specimens collected by him were strongly marked with black, but the majority were in winter-plumage.

Mr. J. W. Mellor says he collected specimens on the Capricorn group of Islands, Queensland, in October, 1910. He records it as not plentiful, being seen in twos and threes, and mixing with other species of waders. He also saw these birds at Stansbury on Yorke Peninsula, South Australia, on April 17th, 1911, on the salt-flats when the tide was low.

Writing of this bird on Bering Island, Stejneger* says: "It makes its appearance early in May (in 1883 the first ones were observed on the 7th), and the beach, especially on the north shore of Bering Island, fairly swarms with them. In June they disappear, and only a few remain during the summer. These, I suppose, do breed, although I did not succeed in finding any of their nests. However, as early as the latter part of July, even larger flocks than those seen in spring, return from the north. From this time and until late in autumn, enormous masses of them may be seen on the killing grounds, near the seal rookeries, where thousands of putrified carcasses of the slain fur-seals swarm with myriads of the white larvæ of the flesh-fly, upon which the pretty Turn-stones feed and grow exceedingly fat. At sunset they retire to the beach, where they pass the night, not, however, without having performed a soldier-like drill by flying up and down the endless tundra, now in full body, now again in detached divisions, and with admirable precision turning and maneuvering as if obeying the command of a leading officer."

Swinhoe (*Ibis* 1870, p. 361): "We found large numbers of these in the Poochin river (N.W. Hainan) on the 5th of March. They sat on the fishing stakes, and ranged themselves in rows on the ropes that run from stake to stake. The four specimens I brought away were all acquiring the summer plumage."

Seeböhm (*Ibis* 1888, p. 348) records it on Great Liakoff Island, east of the Lena Delta, on June 16th, and on the 27th a nest with four somewhat incubated eggs was found, and on the 13th of August a fully fledged young bird was seen.

Middendorff (*Sibirische Reise*, p. 213, 1851) writes that it arrives on the Taimyr River, Russia, on June 4th, and was breeding by July 10th, the young being fledged by the 24th; by August 10th they had all departed. He also found it as early as the 25th May, and a few pairs were breeding up to the end of June on the Boganida. On the Greater Schantar Island he

* *Bull. U.S. Nat. Mus.*, No. 29, p. 103, 1885.

THE BIRDS OF AUSTRALIA.

shot specimens on August 9th in winter-plumage, which he considered had bred there.

La Touche (*Ibis* 1892, p. 497) says this species passes Foochow in September and October. A male in breeding-plumage being shot on September 12th.

Campbell and White* write: "A fair number of these birds was seen on the sandy beaches of Mast Head, Northwest and Tryon Islands. They appeared to have just arrived in company with other Waders from their Northern breeding haunts, and could have had but scant rest or nourishment on the way down, for they were very light and poor."

In the *Cat. Birds Brit. Mus.*, Vol. XXIV., only one form of *Arenaria interpres* is recognised, but in the A.O.U. *Checklist*, 3rd ed., p. 131, 1910, two subspecies are admitted as occurring in America, thus:—

a. Arenaria interpres interpres Linné (*Syst. Nat.*, 10th ed., p. 148, 1758, Islands of Gothland, Sweden).

Range. Old world. Breeds in western Alaska from Point Barrow to the Yukon delta, and in western Greenland, Scandinavia, northern Russia, Siberia and Japan; winters on the coasts of Europe and Asia to South Africa, Australia and Oceanica.

b. Arenaria interpres morinella Linné (*Syst. Nat.*, 12th ed., p. 249, 1766, Coast of Florida).

Range. North and South America. Breeds on Arctic shores from Mackenzie River east, probably to Melville Peninsula, and north to Melville Island; winters from central California, Texas, Louisiana, and South Carolina to southern Brazil and central Chile.

This recognition was due to the work of Palmer who, in *Fur Seals and Isl. N. Pac. Ocean*, pt. III., 1899, wrote up the avifauna of the Pribilof Islands. He there differentiated between the bird which he recorded as an "Abundant fall migrant on the Pribilofs," and the eastern American bird—as (p. 410): "This bird differs from its American relative by its more extensive black areas and much less amount of chestnut. It is larger and the feet and legs are more strongly colored. A comparison of a good series of Pacific birds from the Pribilofs, Japan, and other points, with a fine series from eastern America shows their unlikeness; and a comparison of these Pacific birds with birds from Europe, Greenland and Africa shows a great general resemblance; in fact, two Greenland adult specimens kindly loaned me by Mr. F. M. Chapman, are indistinguishable from *interpres* though easily so from our eastern bird. Female birds from the Pacific seem to be blacker than the European bird, but whether a good comparable series of these last taken in spring and summer would show it, I am unable to say, my series not being extensive enough. All Alaskan and Greenland specimens that I have seen, about forty, are readily distinguished from our common eastern American species. Alaskan and un-Alaskan specimens are a trifle smaller than Japanese or Pribilof birds, but they may be younger" . . . (p. 414) "The common turnstone of eastern North

* *Emu*, Vol. X., p. 198, 1910.

EASTERN TURNSTONE.

America, as shown above, is quite a different bird to its *Paleartic* relative. It is smaller and more highly coloured, and lacks the extensive black areas of *interpres*, besides lacking the chestnut and black mottling of that bird on the median wing-coverts. The scapulars and tertiary plumes are usually without the black, and are much more highly and more extensively chestnut" . . . (p. 415) "In *interpres* the contrast of dark colour and chestnut on the scapulars and tertials is nearly always sharp: in *morinella* it is nearly always blended. The first is mostly black, the latter mostly clove brown . . . The feet and legs of *morinella* lack the rich, deep orange red or vermilion color of *interpres*. They are orange red in color, but pale in contrast to the deeper and highly colored *interpres*" . . . (p. 417) "That *morinella* has escaped its proper place till now is due to several causes . . . the absence of specimens in American museums showing what the European bird really is, and also a lack of home specimens and . . . a lack in European collections of a series properly made of fresh skins of the American bird. For instance, Mr. Seebohm had but two unsexed specimens of *morinella*, yet had positive views."

In view of this last sentence Palmer's own conclusions read quaintly, as he writes: "I have examined in all 167 specimens—85 of *interpres*, 82 of *morinella*"—and then gives a table showing that only three European males and one Greenland male had been examined. The average wing of the three European males is given as 5.99 inches, and the wing of the Greenland male was — "?" Yet Palmer diagnosed the species thus:—

Large; wing usually more than 6.00 *A. interpres*.

Smaller; wing nearly always less than 6.00 *A. morinella*.

Probably Palmer relied on the measurements in the *Cat. Birds Brit. Mus.*, Vol. XXIV., for his wing-values, but of course this was inadmissible as authors measure so differently.

Palmer separated the birds *specifically*, and this was recognised in the 10th Suppl. to the A.O.U. *Checklist*, *Auk* Vol. XVIII., p. 297, 1901, though apparently Oberholser (*Osprey*, Vol. IV., p. 96, 1900) had already recorded their intergradation. In the *Auk*, Vol. XXIII., p. 335, 1906, Bishop again recorded this fact, and then in the 14th Suppl., *Auk*, Vol. XXV., p. 368, they were recognised as only worthy of subspecific distinction. No further comparison of Alaskan specimens with European birds seems to have been made.

Although hundreds of these birds are available to me, about three hundred being contained in the collection of the British Museum, no long series of breeding birds have yet been collected and comparatively few fully-plumaged birds are at hand. When such are examined, however, there can be no

THE BIRDS OF AUSTRALIA.

hesitation in accepting the North American bird as subspecifically distinct from the Alaskan and Japanese birds, as pointed out by Palmer. The noticeable differences are the prevailing chestnut colour and its light shade. While Japanese birds are nearer European birds in the generally more black appearance, they are easily separable by the deeper chestnut colouring of the European birds, the Alaskan and Japanese birds being intermediate between the European and North American birds in this respect. As regards measurements the North American birds certainly average slightly less than the Alaskan and Japanese birds, but these also seem to be smaller than European birds. These latter also seem to have longer bills, but breeding series are required to accurately differentiate the forms.

Admitting that more work must be done before the subspecies can be correctly determined, I am using the name given to an Eastern bird in preference to that given to a West European bird, and would tentatively recognise—

Morinella interpres interpres (Linné); Europe and West Asia, breeding in Arctic Regions and wandering southwards in the nonbreeding-season.

Morinella interpres oahuensis (Bloxham); East Asia and Alaska (breeding), wandering southwards in the nonbreeding-season; visiting Australia.

Morinella interpres morinella (Linné); North America, breeding in the Arctic Regions "from the MacKenzie river east," and wandering southwards in the nonbreeding-season.

FAMILY—HÆMATOPODIDÆ.

GENUS—HÆMATOPUS.

HÆMATOPUS Linné, Syst. Nat., 10th ed., p. 152, 1758 Type *H. ostralegus*.

Also spelt—

Hæmatopus Bonnaterre, Tabl. Encyc. Méth. Ornith., Vol. I., p. 25, 1791.
Hæmantopus Forster, Synop. Cat. Brit. Birds, p. 26, 1817.
Hæmotopus Brehm, Vögel Deutschl., p. 560, 1831.

Ostrelaga Bonnaterre, Tabl. Encyc. Méth. Ornith.,
 Vol. I., p. lxxxii., 1791 Type *H. ostralegus*.

Also spelt—

Ostralega id., *ib.*, p. 25.
Ostralegus Macgillivray, Man. Brit. Ornith., Vol. II., p. 58, 1842.

Melanibyx Reichenbach, Nat. Syst. Vögel, p. xii, 1852 Type *H. niger*.

Ostralegus id., *ib.*... .. Type *H. o. longirostris*.

To me the Oystercatchers constitute a distinct family of birds, whose exact relationships are somewhat obscure.

They are wading birds characterised by very long straight, laterally compressed bills, long wings, short legs and stout feet.

The bill is long and straight, laterally compressed in front of the nostrils, much longer than the head and also longer than the tarsus: the nostrils lie near the base of the culmen as longitudinal slits, in a groove which extends along half the length of the bill. The wings are long and pointed with the first primary longest and more than twice the length of the tail which is square. Metatarsus short and thick and entirely covered with somewhat hexagonal scales; toes short and thick, with slight webs between the basal phalanges, and the skin of the soles laterally extended. Hind toe entirely absent.

Seebohm, whose generic limits were very wide, wrote: "The Oystercatchers are a small compact group of birds, very closely connected with each other, and very clearly differentiated from all other groups of birds. The bill of the Oyster-catcher is very abnormal."

I am unable to indicate any near alliance with the other birds placed near this group, and hence I am accepting them as worthy of family rank.

THE BIRDS OF AUSTRALIA.

Study of juvenile-skins does not avail much, as the bill in the nestling is quite characteristic though much unlike that of the adult; the figures here given show its peculiar features.



NESTLING.

HALF-FLEDGED.

The metatarsus of the nestling is covered throughout with hexagonal scales as in the adult; this is worthy of remark, as will be shown hereafter in connection with the succeeding groups.

The present genus indicates one of the idiosyncrasies of those who based their genera upon structural features, for though Reichenbach split the genus into three, these were immediately lumped again as no structural differences could be observed. The forms of "Sooty" Oystercatcher living in South America however, have a very peculiar-shaped bill, which has often been noted. No systematist has, however, dared separate them: yet very much slighter differences are made the basis of generic names among the *Passeriformes*, by most conservative workers. I am unable to appreciate such inconsistent grouping, and therefore propose for the Falkland Island Oystercatcher, called *H. quoyi* Brabourne and Chubb, the subgeneric term *PROHÆMATOPUS*. This name may suggest the structural relationship this bird seems to bear to the genus *Hæmatopus*, as in it the bill-characters observed in the nestling seem to be perpetuated and exaggerated, while in typical *H. ostralegus* they disappear while the bird is still in its downy state.

It might be also noted that Oystercatchers do not lay the pear-shaped eggs typical of Limicoline birds, and generally seem ill-classed as such. Their distribution as a group is peculiar, and they are well worth detailed study from every point of view.

Thus *H. ostralegus* breeds in Northern Europe, and wintering southwards as far as North Africa, does not appear to breed in Africa; birds of this species are not uncommon in North-west India, but their breeding-place is unknown; recurs on the shores of North China, though absent from the Philippines; breeds all round the shores of Australia and New Zealand, and has also been found on some of the Moluccan Islands. The New World forms somewhat differ, though the Falkland Island Pied Oystercatcher is approached by the South Australian and New Zealand races.

HÆMATOPUS.

The New World "Sooty" Oystercatchers are easily differentiated from those of the Old World by the coloration and bill-characters.

Round the New Zealand coasts, all Australia, and at South Africa occurs a "Sooty" Oystercatcher, of which more later. In the two former places a form of *H. ostralegus* lives alongside, but at South Africa only the "Sooty" form is found. Whether this form occurs up West Africa is not known, but the Canary Islands harbour a close relative. It should be remembered that in this family the female is always larger than the male though generally somewhat duller in coloration. This superiority in size of the female is most marked in the length of the bill, and though recorded in the *Catalogue* of the Birds in the British Museum in the case of the British Oystercatcher, in most other species the disparity in size is not noted. This may be due to lack of data on the specimens or to ignorance of the plumage-changes undergone by exotic species. In the case of the Australian Pied Oystercatcher the immature would seem to take on the adult-plumage at the end of the first season when it is not fully grown, and in all its measurements is much smaller than an old bird. If a female in this plumage were compared with an old male, the differences in size might not be noticed.

Key to the Species.

<i>A.</i> Base of primaries black	..	..	..	<i>H. ostralegus longirostris</i> , p. 15.
<i>B.</i> Base of primaries white	..	..	..	<i>H. ostralegus picatus</i> , p. 23.

J G Keulemans. del

Witherby & Co



$\frac{2}{5}$
HÆMATOPUS LONGIROSTRIS .
(*PIED OYSTER - CATCHER*).

HÆMATOPUS OSTRALEGUS LONGIROSTRIS.

PIED OYSTERCATCHER.

(PLATE 126.)

HÆMATOPUS LONGIROSTRIS Vieillot, Nouv. Dict. d'Hist. Nat., Vol. XV., p. 410, 1817 ; New South Wales.

Hæmatopus longirostris Vieillot, Nouv. Dict. d'Hist. Nat., Vol. XV., p. 410, 1817 ; Gould, Birds Austr., Vol. VI., pl. 7, 1845 ; *id.*, Handb. Birds Austr., Vol. II., p. 215, 1865 ; Masters, Proc. Linn. Soc. N.S.W., Vol. I., p. 60, 1876 ; Ramsay, *ib.*, Vol. II., p. 197, 1878 ; Seebohm, Geogr. Distr. Charadr., p. 304, 1887 (pars) ; Ramsay, Tabl. List Austr. Birds, p. 19, 1888 (pars) ; North, Austr. Mus. Cat., No. 12, p. 299, 1889 (pars) ; Legge, Austr. Assoc. Adv. Sci., Vol. IV., p. 981, 1892 ; Campbell, *ib.*, Vol. V., p. 426, 1893 ; Sharpe, Cat. Birds Brit. Mus., Vol. XXIV., p. 112, 1896 (pars) ; North, Birds County Cumberl., p. 109, 1898 ; Hall, Key Birds Austr., p. 80, 1899 ; Campbell, Nests and Eggs Austr. Birds, p. 776, 1901 ; A. G. Campbell, Emu, Vol. II., p. 208, 1903 ; Hall, Key Birds Austr., p. 80, 1906 ; Mathews, Handl. Birds Austral., p. 23, 1908 ; Ingram, Ibis 1908, p. 462 ; Littler, Handb. Birds Tasm., p. 122, 1910 ; Campbell and White, Emu, Vol. X., p. 198, 1910 ; Ogilvie-Grant, Ibis 1910, p. 183 ; Carter, *ib.*, p. 657.

Hæmatopus australasianus Gould, Synops. Birds Austr., pt. iv., App., p. 6, 1838 (New South Wales).

Ostralegus longirostris Reichenbach, Nat. Syst., Vogel, p. xii., 1852. //

Hæmatopus longirostris Ramsay, Proc. Linn. Soc. N.S.W., Vol. I., p. 187, 1877.

Hæmatopus longirostris longirostris Mathews, Nov. Zool., Vol. XVIII., p. 213, 1912.

Hæmatopus longirostris mattingleyi *id.*, *ib.* (Cooktown).

DISTRIBUTION. Queensland, New South Wales, Victoria, Tasmania, South Australia, South-west Australia.

Adult male. Head and neck all round, back, wings, and tail black ; lower-back, rump, upper tail-coverts, and base of tail white, like the breast, abdomen, axillaries, and under tail-coverts ; under wing-coverts black margined and tipped with white ; some of the feathers on the upper-breast fringed with white at the tips ; upper greater wing-coverts broadly tipped with white ; secondary-quills white at the base with black tips. A few black feathers on the thighs ; bill scarlet, cream-colour at the tip ; iris and eyelid red ; feet pinkish-red. Total length 500 mm. ; culmen 82, wing 282-7, tail 116, tarsus 61.

Adult female. Similar in colour of plumage to the adult male but larger and with a longer bill.

THE BIRDS OF AUSTRALIA.

Immature. Differs from the adult in having the parts that are black in the adult, brown. The wing-coverts and scapulars are tipped and edged with white. The flank-feathers are tipped with brown. The brown extends on to the lower-back. The upper tail-coverts are almost all brown, having only a slight edging of white. Bill, culmen, and point dark brown; legs and feet dark in the skin.

Young, in down. "Greyish-buff, with black spots on the back, and with a dark longitudinal stripe on each side above the wing" (Campbell).

Nest. A depression in the sand.

Eggs. Clutch, two; ground-colour pale stone, spotted all over with marks of very dark reddish-brown and lavender; axis 61-65 mm., diameter 40-43.

Breeding-season. August to January (Littler, Tasmania).

DAMPIER saw these birds on the West coast of Australia, and gave a figure of one in the third volume of *A Voyage to New Holland . . . in the year 1699*; although the bird was figured with four toes, it is nevertheless a good drawing. He speaks of them in his book as Red-bills. Cook also noticed them as well as the black species, and in the Watling Drawings, No. 254, is a beautiful painting of an adult, the writing on it being, "New Holland Oyster-catcher, Qu. a Variety of Pied Oister-catcher, Latham, Syn. 5, p. 219. Native name Booming, seldom seen in more than pairs, it is a very Solitary Bird."

No. 255 is also a painting of a bird just arriving into full plumage, and on it is written, "Native name, Boo-an-ing." A note is added which reads: "Native name Boo-an-ing, or Booming. This is a very recluse and Solitary Bird, being never found in more than pairs. It has but one simple plaintive tone, which it never varies, the Drawing is about one-fourth of the Natural size. This appears a variety of the red Bill, which is the common name it goes by here, or it is a young one full plumage, for most others have had the legs as red as the Bill. It frequents the Sea Shores, and lives on spawn and young Fish, both shell and others, which gives the Flesh a Fat of which it has a great share, it is a strong Fish of an oily flavour, both the Flesh and Fat, are very high colored, particularly the latter, which is mostly red and very abundant as before noticed. It is naked or bare of Feathers one third up the thigh. Its toes are more fleshy and thick than Sea Birds in general, and are a little way connected by a Web or membrane in so much that they may be called palmated.

New Holland Oister-catcher Latham, Syn. 5, p. 212

Variety of Pied Oister Catcher. Qu. if not a new species."

Mr. Frank Littler of Tasmania tells me that this species, except during the breeding-season, moves along the shores in small bands of from four to eight. At any time of the day it may be seen running along on the sands, diligently searching for scraps of all sorts washed up by the tide, and for marine insects of various kinds.

PIED OYSTERCATCHER.

When they have young in the nest, they dash over the heads of any intruders, screaming loudly and making all sorts of endeavours to draw them away from the scene.

They are sociable birds and move with other shore-roving species, such as Curlews, Sandpipers, etc. They prefer shores with stones and reef outcrops, as among these they find most of their food of molluscs, etc. The same author* says: "Its flight is rapid and strong; frequently when on the wing it will utter its loud call notes, as though endeavouring to attract the attention of others of its species."

Mr. Charles Belcher reports: "Common as it is on all the islands of Bass Straits, and though it is also found on the shores of Eastern Victoria, I have only once met with it on the stretch of seaboard from Port Phillip Heads to Cape Otway. The eggs of this and *H. niger fuliginosus* are almost impossible to distinguish from each other, so that it is very necessary to see the birds if one wants to insure identity. We found, in November 1901, that these two species were well distributed over all the Furneaux group of Islands, the 'Sooty' being rather more plentiful."

Mr. Edwin Ashby has collected birds at Edithburgh, Yorke Peninsula, South Australia, and also found them plentiful on the sand-spit in Venus Bay, in February, 1910; it is also numerous at Murray Mouth.

Mr. J. W. Mellor informs me that Kangaroo Island and all the islets and shores of the two gulfs of South Australia are ideal spots where it may be seen running along the shores and wading in the shallows, sticking its bill down to its full depth in search of the deeper living crustaceans and insects always plentiful in the sandy slopes of the beaches. Its two beautifully spotted eggs are placed on the bare sand without any pretence at nest-building, the chief means of their protection being the scanty surroundings of the locality: there may be a few pieces of seaweed or some shingle or small stones about and these assist in blending with the spots on the eggs and make the protective mimicry complete.

As they make their nests in the open they can see the approach of an intruder at a distance; they then run away and keep out on the rocks or shore till danger is past, returning to the eggs very cautiously.

The bird figured and described was collected by Stalker on the Burdekin River, Queensland, on April 25th, 1907.

The forms and distribution of Australian Pied Oystercatchers cannot be said to be well known. In the *Catalogue* of the Birds in the British Museum *H. longirostris* was accepted for the Australian and New Zealand bird, which was differentiated from *H. ostralegus* by "having no white on the inner webs

* *Handb. Birds Tasm.*, p. 123, 1910.

THE BIRDS OF AUSTRALIA.

of the primaries, the edge of the wing black, the upper tail-coverts broadly tipped with black and none of the inner secondaries entirely pure white." These features appeared so constant, that when my "Reference List" was compiled I included three forms as inhabiting Australia, using for the species-name *H. longirostris*.

Recent acquisitions and the examination of more material proved this course to be inaccurate, and once more the investigation as to the correct name has involved a review of all the Old World specimens available.

The typical form was so well-known to the older authors that in the tenth edition of the *Systema Naturæ*, Linné (p. 152, 1758) gave no description but simply quoted eight references as illustrative of the bird. As the first two referred to his own works on Swedish birds, that place has been accepted as the type-locality of *H. ostralegus*. Bonnaterre's *Ostralega pica* (*Tabl. Ency. Méth. Ornith.*, Vol. I., p. 26, 1791) and Pallas's *Hæmatopus hypoleuca* (*Zoogr. Rosso-Asiat.*, Vol. II., p. 129, 1827) are simply new names for Linné's bird. Brehm (*Vögel Deutschl.*, pp. 562-563, 1831) added a couple of synonyms in naming *H. balthicus* and *H. orientalis*.

All the Pied Oystercatchers wherever met with seem to have been included under the one species, until Vieillot (*Nouv. Dict. d'Hist. Nat.*, Vol. XV., p. 410, 1817) separated *Hæmatopus longirostris* as follows:—

Le bec de cette espèce est plus long que celui des autres et de couleur rouge. Son plumage est en général noir, à l'exception du bas de la poitrine et des parties postérieures que sont d'un blanc pur. On le trouve dans l'Australasie. Je soupçonne que *l'huitrier totalement noir*, qui se trouve dans la même partie du monde et dans le nord-ouest de l'Amérique septentrionale, appartient à la même espèce.

A few years after, probably ignorant of Vieillot's action, King named *Hæmatopus picatus* (*Survey Intertrop. Coasts Austr.*, p. 420, 1826) thus:—

H. ater: corpore subtus, fascia alarum, uropygio, caudaeque basi, albis: remigibus primoribus totis nigris.

Rostrum pedesque rubri; *collum totum nigrum*; *tectrices inferioris primores fuscae*, *secondariae albae*, ad *carpum* et ad *marginem exteriorem nigro-variegatae*: *fascia alarum angusta*: *remiges primores supra nigrae*, *subtus fuscae*; *utopygium album parcé nigro variegatum*.

Longitudo corporis ab apice rostri ad apicem caudae, 22; *alae* a carpo ad remigem primam, 11; *rostri* 3 3/10; *tarsi* 2 3/10, *caudae* 5.

When Gould commenced his *Synopsis* of the Birds of Australia, he named almost every bird he handled on the principle that Australian birds must be different on account of the locality. At the end of that work he added a long list of new species and genera and included therein, p. 6:—

Hæmatopus australasianus. Head, neck, breast, back, wings and the tail feathers, for three parts of their length from the tip, deep greenish-black; the tips of the wing-coverts, abdomen, rump, upper and under tail-coverts and the bases of the tail feathers pure white; bill deep orange; feet red. Total length, 17 inches; bill 3 1/8; wing 10 3/4; tail 4 1/2; tarsus 2 1/4.

PIED OYSTERCATCHER.

Habitat: New South Wales.

Nearly allied to the *Hæmatopus ostralegus* of England.

It will be noticed that there is nothing in this description to indicate the grounds on which Gould separated the Australian bird: all the distinctive features are missing from it, while he had overlooked the two prior names given, as cited above.

In the *Proc. Zool. Soc. (Lond.)* 1871, p. 405, Swinhoe introduced *Hæmatopus osculans*, writing:—

On drawing up my last list and on finding our bird to be different from the European species, I set it down as *H. longirostris*, Gray, without, however, comparing specimens. Prof. Schlegel (*Mus. des Pays-Bas*) draws attention to my mistake, but identifies the bird with *H. ostralegus*. On careful comparison I find it intermediate. It has white on its primary quills, but not to such an extent as in *H. ostralegus*; and it has the long bill, and black tips to its white upper tail-coverts as in *H. longirostris*, but the tip-spots are smaller. Thus holding an intermediate position between the two, it is impossible to class it with either species, and I would propose to separate it as above.

Characters:—First three rectrices with black shafts, the fourth showing a little white, which increases and expands on the quills that follow (in *H. ostralegus* the white commences on the first quill, and in *H. longirostris* the shafts are all black). The upper tail-coverts that overlap the tail, tipped with black (pure white in *H. ostralegus*). Bill, from the forehead, 3.6 inches. These characters are taken from an adult male shot in Talien Bay in July. An immature bird shot in November at Swatow shows the same long bill, small extent of white on the wing, and dark tips to the extreme uropygials, but its dark parts are brown instead of black. Neither specimen has the white collar. This Oystercatcher breeds in North China (Talien Bay) and wanders down the coast in winter as far, at least, as Swatow.

Von Martens (*Ornith. Monatsb.* 1897, p. 190) separated the New Zealand bird under the name *Hæmatopus finschi*:—

Diese Art dürfte dem *Hæmatopus longirostris* Vieill. am nächsten stehen, unterscheidet sich aber von dieser australischen Art wesentlich durch die weisse Zeichnung einiger Schwingen I., Ordnung und durch die teilweise rein weissen Schwingen II. Ordnung. (Ferner hat das typische Stück rein weisse Unterschenkel; doch dürfte dies kein Artkennzeichen sein, da bei zwei im Berliner Museum befindlichen, im übrigen ganz gleichen Stücken die Unterschenkel schwarz gemischt sind). Von *Hæmatopus ostralegus* Linn. und *Hæmatopus osculans* Swinh. ist die neue Art durch den Margel der weissen Schäfte an den Schwingen I Ordnung untersherden. Ganze Länge 440 mm. Firste des Oberschnabels 85 mm. Flügellänge 250 mm. Schwanylänge 110 mm. Tarsus 48 mm.

Hab. Saltwater Creeks (Newseeland) 1 ♀.

Two years later Rothschild described *Hæmatopus reischeki* (*Bull. Brit. Ornith. Club*, Vol. X., p. IV., 1899) with the following remarks:—

Male ad. Differs from *H. longirostris* Vieill. and *H. finschi* Martens, at first sight in having the lower back and rump black and not white, and the upper tail coverts being mixed black and white, not white. The bill is much longer than in a series of twenty-three specimens of *H. longirostris* in the Tring Museum, and appears stouter than the New Zealand specimens.

Culmen 102 mm.; wing 270, tarsus 60.

H. longirostris, ♂ ad. Culmen 75-85 mm.; wing 245-255; tarsus 55.

The type was shot in June 1885 at Kaiparu, New Zealand, by A. Reischek.

THE BIRDS OF AUSTRALIA.

H. finschi of Martens (*Orn. Monatsb.*, 1897, p. 190) appears from the description to agree with two birds collected by Baron von Hügel at Freshwater Creek, Canterbury, New Zealand, and another from Kaipoi, Canterbury. These birds, however, vary among themselves in the amount of white on the quills, which is the distinction given by Herr Martens; and this variation in the amount of white leads me to consider that his *H. finschi* and three birds from Baron von Hügel are only aberrations of *H. longirostris*.

In the *Nov. Zool.*, Vol. XVIII., p. 213, 1912, I separated the North Queensland bird as *Hæmatopus longirostris mattingleyi*, on account of the smaller size of the specimens I handled, noting: "Differs from *H. l. longirostris* in its smaller wing: 268 mm.; typical birds measure: wing 282-287 mm." Receipt of specimens from Melville Island proved a disturbing factor, inasmuch as some of them showed white markings on the inner webs of the primaries, while one had all except the outer primary strongly marked, as in the English bird.

No Southern bird in my own, nor any of the specimens in the British Museum collections, had shown the least trace of white previously.

With his usual courtesy the Hon. Walter Rothschild has placed at my disposal his series of this species from Australia, New Zealand, and the Islands North of Australia; the latter have been most valuable, as it is apparently a scarce bird in such places. Amongst those localities were two from Lewis Island, North-west Australia, and one from Luang Island, showing white markings on the inner webs of the primaries; in addition the specimens from Luang Island, the Tiandoe Islands, St. Aignan Island—South-east New Guinea, and some Melville Island specimens as well as Torres Strait birds, agree in having very few black feathers on the inner edge of the wing, thus approaching very closely to *H. osculans*.

It appears to me that Australasian birds can only be regarded as subspecifically distinct from the European typical form, and on account of the difficulty in limiting the ranges of the forms suggested, I am proposing in this place to recognise two only, but anticipate more, as inhabiting Australia.

The results of my investigation are as follows:—

Hæmatopus ostralegus ostralegus Linné; Europe.

In the *Hand-List of British Birds* (p. 163) by Hartert, Jourdain, Ticehurst, and Witherby, the distribution outside Great Britain is given as "Europe generally, eastwards to central Asia. Wintering as far south as Mediterranean, north Africa, Red Sea, and north-west India. Replaced by a closely-allied form in north-east Asia, and by others in Australia and New Zealand, north and South America." In the American Ornithologists' Union's *Checklist* the range of *Hæmatopus ostralegus* reads: "Europe, Africa and India. Breeds from the Arctic Circle to the coasts of Europe, the Black Sea, and Turkestan: winters southwards to the coasts of central Africa and India, occasional in Greenland."

PIED OYSTERCATCHER.

I have reproduced these as they appear to be based on the distribution given in the *Catalogue* of the Birds in the British Museum, where a number of birds from India are catalogued under *H. ostralegus*.

The chief characters of this form in the adult summer-plumage are: the red bill; and feet and head, neck, breast, wings and end of tail black: the remainder of the under- and upper-surface pure white, the secondaries and a large patch on the inner webs of the primaries being of that colour. The immature-plumage is brownish where the adult is black, but in addition there is a white crescent-shaped mark on the throat. This latter is also sometimes stated to be the winter-plumage, but all the specimens I have seen were undoubtedly immature birds.

Swinhoe's description gives the points of difference between his *H. osculans* and the Western bird: the longer bill, less white on the primaries, and dark tips to upper tail-coverts. The immature specimens I have noted from China and Japan have no white mark on the throat.

All the Indian birds I have seen, including those recorded in the *Catalogue* of the Birds in the British Museum, have been killed in winter and are undoubtedly immature specimens: they have much more white on the throat than West European juveniles, also noticeably longer bills. They may belong to a race breeding in Turkestan (see A.O.U. *Checklist*) but should not be referred to *H. ostralegus ostralegus*.

Hæmatopus ostralegus osculans Swinhoe; China and Japan.

Hæmatopus ostralegus picatus King; North-west and North Australia.

Near *H. o. osculans* but always separable by the presence of a narrow black edging on the inner wing, and generally by the absence or small amount of white on the inner webs of the primaries. In some cases also the black of the upper-back extends on to the lower-back.

Hæmatopus ostralegus longirostris Vieillot; East and South Australia.

Differs from the preceding in the entire absence of the white markings on the inner webs of the primaries, in having more black on the inner portion of the wing and the black of the upper-back extending on to the lower-back, while the bases of the rump-feathers show dark markings.

Of this form *H. australasianus* Gould is an absolute synonym, while I would tentatively also cite my *H. longirostris mattingleyi* as a synonym, but also note that in addition to my North Queensland specimens—one from Dunk Island, another from Wednesday Island, two from the Tiandoe Islands, and one from St. Aignan Island, South-east New Guinea, all agree in being smaller, and also in having less black on the inner bend of the wing.

THE BIRDS OF AUSTRALIA.

Hæmatopus ostralegus finschi Martens ; New Zealand.

New Zealand examples are easily separated from those from Australia by their longer bills ; but in the series available they seem to suffer from either interbreeding with the Sooty form or a strong tendency to melanism.

The specimen Rothschild named *H. reischeki* is matched by another in the British Museum, while in the Rothschild collection is a bird agreeing absolutely with the description of one in the Canterbury Museum given by Buller in the *Birds of New Zealand*, p. 225, 1873, who, however, classed it under *Hæmatopus unicolor*. It has the white wing-patch of *H. ostralegus*, while the breast, abdomen, under-wing, axillaries, and tail-coverts are mixed black and white, with a few white tips to the rump-feathers only. I would ally it to *H. ostralegus* in preference to *H. unicolor*, as in addition to the white wing-patch there is a whitish patch on the inner webs of the primaries, a character quite foreign to the latter.

It should be noted that the encroachment of black on to the lower-back in the case of *H. o. longirostris*, has become exaggerated and covered the rump in the specimen named *H. reischeki*.

In this connection it is interesting to note that the Falkland Islands Pied Oystercatcher, known as *H. leucopus* Lesson, has the black permanently on to the rump, the upper tail-coverts alone being pure white ; the black extends further down on the breast than in *H. ostralegus* ; the white wing-patch is still more decreased (it is less in the Australian and New Zealand, birds than in the European and Asiatic forms) ; the inner-wing is still more black, and the primaries are wholly without a white tendency. The relationship between the Falkland Islands form and the New Zealand one may be remote, in which case "*H. reischeki*" is a most interesting aberration, for I agree with Von Martens (*Ornith. Monatsb.*, Vol. XIV., pp. 90-93, 1906) when he concluded that it was such.

HÆMATOPUS OSTRALEGUS PICATUS.

NORTH-WESTERN PIED OYSTERCATCHER.

HÆMATOPUS PICATUS King, Survey Intertrop. Coasts Austr., p. 420, 1826 ; Point Torment, North-west Australia.

Hæmatopus picatus King, Survey Intertrop. Coasts Austr., p. 420, 1826.

Hæmatopus longirostris Carter, Emu, Vol. III., p. 175, 1904 ; Hill, *ib.*, Vol. X., p. 264, 1911.

Hæmatopus longirostris picatus Mathews, Nov. Zool., Vol. XVIII., p. 214, 1912.

DISTRIBUTION. North-west Australia ; Northern Territory.

Adult male. Differs from *H. l. longirostris* in having white on the base of the primaries ; more noticeable on the under-wing.

Adult female. Differs from the adult male in its larger size and longer bill.

Nest. " A few pieces of dry seaweed on the beach, just above high water mark " (Carter).

Eggs. " Clutch, two " (Carter).

Breeding-season. " July to September " (Carter).

MR. TOM CARTER tells me that the native name of this species at Point Cloates is Warran-Garree. It is a common resident there and in the North-west. It is usually seen in pairs on sandy beaches, but after the breeding-season the birds go about in small flocks up to twelve or so. The two eggs are laid on a few pieces of dry seaweed on the beach just above high-water mark. The eggs are found on various dates between July 5th and September 17th. As the birds approach and leave the nest by running, their numerous footprints are a good guide to one containing eggs.

Mr. J. P. Rogers when collecting for me at Derby, North-west Australia, reported them wild there, and never seen away from the beach. In March, 1910, he found them in small flocks but they kept out on a sand-spit or mud-flat well away from any cover.

HÆMATOPUS NIGER FULIGINOSUS.

EAST AUSTRALIAN BLACK OYSTERCATCHER.

HÆMATOPUS FULIGINOSUS Gould, Birds Austr., Vol. VI., pl. 8, 1845; Tasmania.

Hæmatopus fuliginosus Gould, Birds Austr., Vol. VI., pl. 8, 1845; *id.*, Handb. Birds Austr., Vol. II., p. 217, 1865; Ramsay, Proc. Linn. Soc. N.S.W., Vol. I., p. 187, 1877; North, Birds County Cumberl., p. 109, 1898; Mathews, Handl. Birds Austral., p. 23, 1908.

Hæmatopus niger australasianus Bonaparte, Comptes Rendus Sci. (Paris), Vol. XLIII., p. 420, 1856.

Hæmatopus unicolor Ramsay, Proc. Linn. Soc. N.S.W., Vol. II., p. 197, 1878; *id.*, Tab. List Austr. Birds, p. 19, 1888; Legge, Papers and Proc. Roy. Soc. Tasm., p. 130, 1888; North, Austr. Mus. Cat., No. 12, p. 300, 1889; Legge, Proc. Austr. Assoc. Adv. Sci., Vol. IV., p. 982, 1892; Campbell, *ib.*, Vol. V., p. 427, 1893; Sharpe, Cat. Birds Brit. Mus., Vol. XXIV., p. 118, 1896 (pars); Hall, Key Birds Austr., p. 80, 1899; Campbell, Nests and Eggs Austr. Birds, p. 778, 1901; *id.* (A. G.), Emu, Vol. II., p. 208, 1903; Hall, Key Birds Austr., p. 80, 1906; Littler, Handb. Birds Tasm., p. 123, 1910; Campbell and White, Emu, Vol. X., p. 198, pl. xx., 1910.

Hæmatopus unicolor fuliginosus Mathews, Nov. Zool., Vol. XVIII., p. 214, 1912.

DISTRIBUTION. South Queensland, New South Wales, Victoria, Tasmania, South Australia.

Adult male. Entirely glossy black above and below; "Bill orange yellow; iris red; eyelid orange yellow; feet dull brick red" (J. Gould). Total length 520 mm.; culmen 82, wing 297, tail 124, tarsus 51.

Adult female. Similar to the adult male, but larger, browner, and with a longer bill.

Nestling, in down. Sooty-brown with white tips on the upper-parts; head black as also two longitudinal lines on the back.

Nest. A depression in the earth.

Eggs. Clutch, two; very similar to the eggs of *H. o. longirostris* but the ground-colour seems darker; axis 65 mm., diameter 44.

Breeding-season. September to December (Ramsay), August to January (Littler, Tasmania).

EAST AUSTRALIAN BLACK OYSTERCATCHER.

MR. FRANK LITTLER* says: "This species is generally to be seen in company with the preceding one [*H. o. longirostris*], but there are some islets in Bass Strait where the Black oyster-catcher is the only species seen. In its economy it is a counterpart of the Pied species. During the breeding season it moves in pairs, at other times in small bands. Very rarely does one see it further inland than the extreme edge of the rocks, where it will allow itself to be splashed time and again by the rollers without moving out of the reach of the water. Even when flying from one part to another of the rocky shore of its haunts, it prefers flying over the water to taking a short cut inshore. Its sharp cry is usually uttered when on the wing but sometimes when at rest, especially should danger threaten. When with eggs or young, many strange antics are performed in an endeavour to entice intruders away. In general disposition the bird is very shy."

The same author sends me the following note: "It will not only feign lameness, but will fall and roll on its back as though in great agony, in order to attract attention, while its young hide under projecting ledges, etc. Its alarm note is a loud piping, shrill cry. Its food consists of molluscs, crustaceans, and other marine life."

Mr. Edwin Ashby says he found this bird fairly numerous at Venus Bay in February, 1910. He also found it nesting in a rocky islet off St. George's River on the north coast of Kangaroo Island in October, 1905.

Mr. J. W. Mellor writes: "Their dark bodies and red bills and legs stand out conspicuously as they perch upon some rock or stand on the beach. I saw a number of them at Stansbury, Yorke Peninsula, South Australia, in April, 1911. They were in twos and threes along the sandy shore, seeking marine food and uttering their plaintive whistle. They can see the approach of a person at a great distance and the whistle is a note of warning to other birds in the same locality, as immediately this signal is given the other birds prick up their heads and start on the move instinctively."

A. G. Campbell, writing on the birds of King Island states †: "This larger species is not so common, and lives mostly among the rocky parts of the coast. At one place, an old resident affirms, a pair of these birds has lived and reared young each season for twenty-five years at least."

The determination of the specific name to be used for the Australian Black Oystercatchers has not been easy. Although noted from New Zealand by the early *voyageurs*, it was apparently thought to be a melanistic form, and no name was given until Temminck in 1820 (*Manuel d'Orn.*, Vol. II., p. 533) described *Hæmatopus niger* as of Cuvier: "Tout le plumage, sans exception,

* *Handb. Birds Tasm.*, p. 124, 1910.

† *Emu*, Vol. II., p. 208, 1903.

THE BIRDS OF AUSTRALIA.

d'un noir profond, et d'un noir brunâtre partout chez les jeunes : bec et pieds d'un rouge de corail ; tour des yeux rouge, taille un peu plus forte que notre Huiterier. On le trouve dans l'Afrique méridionale et dans l'Austral-Asie."

In the *Isis*, 1832, p. 1230, Wagler noticed *Hæmatopus unicolor*, ex Forster's MS., in connection with the New Zealand form.

Though no description was here given, this has commonly been cited as the primary reference to the name. It was not described until the publication, under the editorship of Lichtenstein, of Forster's *Descr. Anim.*, in 1844.

When Gould wrote his *Birds of Australia* he named the Australian bird *H. fuliginosus*, stating that upon comparison with specimens from the Cape of Good Hope, Cape Horn and elsewhere, he found them to differ, but did not state in what respect.

Bonaparte, in the *Comptes Rendus Sci.* (Paris), Vol. XLIII., p. 420, 1856, placed the Black Oystercatchers in Reichenbach's section *Melanibyx*, accepting *ater* Vieill. for the American form, *unicolor* Wagl. for the New Zealand one, *fuliginosus* Gould for the Australian, and *niger* Cuv. for the African one, and noted after each respectively the new names : *H. niger americanus*, *H. niger oceanicus*, *H. niger australasianus* and *H. niger africanus*. These names do not seem to have been considered as validly proposed, and it is fortunate that there is now no need for consideration, as it is agreed to restrict Temminck's *H. niger* to the South African bird.

In the *Proc. Linn. Soc. N.S.W.*, Vol. I., 1875, Castelnau and Ramsay wrote on a collection of birds from the Norman River, Gulf of Carpentaria, Queensland, and on p. 384 included :—

Hæmatopus, nov. sp.?

? *Hæmatopus niger* Cuv. On examining the *Hæmatopi* obtained in North Australia, we find one which differs from all hitherto recorded Australian species, in having a considerable bare space round the eye ; this space is wider in front and above, than behind or below the eye, and, like the bill, is of a reddish carmine colour. The plumage is of a deep sooty black, with little or no gloss, except perhaps on the head and neck ; the wing and tail feathers are of a blackish-brown ; legs deep carmine red. Total length from forehead to tip of tail 15 in. ; bill from forehead 3.2 in. ; from *posterior* margin of nostril 2.5 ; from gape 2.85 ; height, about middle of, 0.5 ; width, 0.3 ; width of upper mandible at the posterior margin of nostril, 0.5 ; wing 10 in. ; tail 4.9 ; tarsus 2.1 ; mid-toe 1.9.

This species is smaller on the whole, and the neck shorter than either of the Australian species ; it comes nearest to *H. fuliginosus* of Gould, but may be at once distinguished therefrom, by the large bare space round the eye and the short bill. It is, moreover, smaller in all its measurements. Should this species prove to be undescribed we propose for it the specific name of *ophthalmicus*.

We regret that from want of a series of the sooty oyster-catchers from other countries to compare with, we are at present unable to determine this question.

When Ramsay in 1877 sank Gould's *fuliginosus* as a synonym of *unicolor* Wagler, he retained as distinct *ophthalmicus*, but when Sharpe wrote the *Cat.*

EAST AUSTRALIAN BLACK OYSTERCATCHER.

Birds Brit. Mus., Vol. XXIV., p. 118, 1896, this was also merged with *unicolor*. This usage was then continued until Hartert, reporting upon a collection of birds from Australia (*Nov. Zool.*, Vol. XII., p. 200, 1905), called the Australian birds *H. unicolor fuliginosus*, writing: "It seems to me that Australian specimens of the black Oyster-catcher can easily be distinguished by their bills being much stouter and more rounded in front on the culmen, not so sharp, knife-like, as in *H. unicolor* from New Zealand."

In my "Reference List" I accepted *unicolor* as the species-name, and admitted three forms for Australia—*H. u. fuliginosus*, *H. u. ophthalmicus*, and *H. u. bernieri* nov., which I characterised as follows (*Nov. Zool.*, Vol. XVIII., p. 214, 1912): "Differs from *H. u. fuliginosus* in its browner coloration and in having a shorter wing and longer tarsus; wing 263, tarsus 56; typical bird's wing 297, tarsus 51."

Study of the black Oystercatchers enables me to put forward the following summary, which approaches the truth, from the series now available. These constitute quite a remarkable group as regards distribution, for the South African, Australian, and New Zealand forms seem to constitute one species, while the Canary Island bird has been also recently described as subspecifically distinct from the South African one. It seems quite strange that the South African bird should be scarcely separable from the South Australian one while the North Australian and New Zealand forms are quite well-marked.

These birds are brown in the immature and the female is brown, while the adult male would seem to be glossy black. Full-grown first-year birds with perfect plumage have shorter wings than old birds, and as usual the female is larger than the male. My nomenclature of the species reads:—

Hæmatopus niger niger Temminck; South Africa.

Of this form *H. capensis* Licht. (n.n.), *H. niger africanus* Bonaparte, and *H. moquini* Bonaparte, may be cited as synonyms.

Hæmatopus niger meadewaldoi Bannerman; Canary Islands.

This form is smaller with a longer bill, and shows a white patch at the base of the primaries which is not seen in any other form. No authentic records are extant of any specimens between South Africa and the Canaries, so that the erratic distribution of the species deserves careful study. It cannot be that melanism is the source of these Sooty Oystercatchers, for the Pied forms are not found at the Canaries or South Africa; yet that might be adduced as the cause of the New Zealand form as it is most plentiful in the South Island where so many melanistic forms occur and so many intermediate specimens have been met with. But these Black Oystercatchers have relatively more powerful legs and feet.

THE BIRDS OF AUSTRALIA.

Hæmatopus niger bernieri Mathews; West Australia.

In a fair series of birds from West Australia none were found to possess the lustrous black of the Eastern form, though recent study seems to point to the fact that no very old birds have been handled from the West though apparently the birds are adult. The long tarsus, however, seems to be distinctive, though the wing-length seems to come near to that of the Eastern bird. From these birds the typical (South African) birds are separable only by the somewhat stouter bill, with the groove in the culmen shorter. Seebohm wrote that the legs and feet of the South African bird were brick-red not deep crimson, as in the Australian; but I have seen no African specimens with reliable data on them.

Hæmatopus niger fuliginosus Gould; South-east Australia.

These are larger, darker, and have a shorter tarsus. As noted above, the tarsus is the best feature for separation though the other characters may still hold good.

Hæmatopus niger ophthalmicus Castelnau and Ramsay; North Australia. Easily separable by the bare space round the eye.

Hæmatopus niger unicolor Wagler; New Zealand.

This form is well marked by the feature which Hartert pointed out—the knife-like culmen anterior to the nostrils; but the bill is also much longer than in the preceding Australian forms.

The American “Sooty” Oystercatchers do not seem to be close relations of these, as they have different shaped bills, brown wings and tail, and more slate-black on the head and under-surface.



Witherby & Co

$\frac{2}{5}$
HÆMATOPUS FULIGINOSUS.
(BLACK OYSTER-CATCHER).

J. J. Keulemans, del

HÆMATOPUS NIGER BERNIERI.

WESTRALIAN BLACK OYSTERCATCHER.

(PLATE 127.)*

HÆMATOPUS UNICOLOR BERNIERI Mathews, Nov. Zool., Vol. XVIII., p. 214, 1912; Bernier Island, South-west Australia.

Melanibyx fuliginosus Heine, Nomencl. Mus. Hein., Ornith., p. 337, 1889.

Hæmatopus unicolor Carter, Emu, Vol. III., p. 175, 1904.

Hæmatopus unicolor fuliginosus Hartert, Nov. Zool., Vol. XII., p. 200, 1905.

Hæmatopus fuliginosus Ogilvie-Grant, Ibis 1910, p. 183; Carter, *ib.*, p. 658.

Hæmatopus unicolor bernieri Mathews, Nov. Zool., Vol. XVIII., p. 214, 1912.

DISTRIBUTION. West Australia, as far north as Point Cloates; Montebello Islands.

Adult male. Differs from *H. n. fuliginosus* in its browner coloration, and in having a shorter wing and longer tarsus; wing 282, culmen 81, tarsus 56.

Adult female. Browner than the male; larger, and with a longer bill.

Nest. "A depression in the sand" (Carter).

Eggs. "Clutch, two" (Carter).

Breeding-season. September (Carter).

MR. TOM CARTER tells me the native name of this bird is Wee-ardoo. It is not so common as *longirostris*, and is usually met with on a rocky or shingly beach, in pairs. One or both birds are fond of perching on the top of a rock. He has met them along the coast from North West Cape to Albany; and further (*Ibis* 1910, p. 658), records that he saw "a pair of the Sooty Oystercatchers busily feeding on the south side of Rabbit Island (near Albany), which is almost all rocky ground."

The type figured was collected on Bernier Island, West Australia, on July 8th, 1906, by Mr. G. C. Shortridge.

* The Plate is lettered *Hæmatopus fuliginosus*.

HÆMATOPUS NIGER OPTHALMICUS.

BARE-EYED BLACK OYSTERCATCHER.

HÆMATOPUS OPTHALMICUS Castelnau and Ramsay, Proc. Linn. Soc. N.S.W., Vol. I., p. 385, 1877; North Queensland.

Hæmatopus ophthalmicus Castelnau and Ramsay, Proc. Linn. Soc. N.S.W., Vol. I., p. 385, 1877; Ramsay, *ib.*, Vol. II., p. 197, 1878; *id.*, Tab. List Austr. Birds, p. 19, 1888; Legge, Proc. Austr. Assoc. Adv. Sci., Vol. IV., p. 983, 1892.

Hæmatopus fuliginosus Hill, Emu, Vol. X., p. 264, 1911.

Hæmatopus unicolor ophthalmicus Mathews, Nov. Zool., Vol. XVII., p. 214, 1912.

DISTRIBUTION. North Queensland (Northern Territory, and North-west Australia?).

Adult male. Differs from *H. n. fuliginosus* in its smaller size, shorter bill, and in having a large bare space round the eye; wing 271 mm., culmen 66, tarsus 53.

Adult female. Larger in all its measurements: wing 281 mm., culmen 80, tarsus 55.

Immature and nestling. Undescribed.

Nest. A depression in the sand.

Eggs. "Clutch, two; ground colour pale stone-grey, spotted and blotched, more at the larger end, with umber, rusty brown and dull slate. Axis 59-60 mm., diameter 40 mm." (White.)

THE only two specimens of Sooty Oystercatcher I have seen from North Australia agree in having the large bare eye-space, from which Castelnau and Ramsay named their specimen. No specimen from southern Australia,



H. N. OPTHALMICUS.

though many have been examined, show this feature, so that it would seem to be characteristic. I give a figure of the head of this interesting form, of which the life-history is quite unknown.

FAMILY—CHARADRIIDÆ.

GENUS—ERYTHROGONYS.

ERYTHROGONYS Gould, Synops. Birds Austr., pt. iv.,
pl. 73, 1838 Type *E. cinctus*.

Also spelt *Erythrogonus id.*, *ib.*, on Plate.

Erythrogenys Gray, Cat. Gen. Subgen. Birds, p. 111, 1855.

SMALL Lapwings without spurs or wattles, proportionately long bills, long wings, short tail, long legs and feet. The bill is straight, as long as the head, with a distinct swollen dertrum; nostrils short and linear, situated near the base of the bill in a groove which extends over two-thirds the length of the bill. Wings long with the first primary longest. There is a bony knob at the bend of the wing in place of a spur. Metatarsus long and slender, apparently scutellated before and behind with a narrow row of hexagonal scales on each side; middle toe more than half the length of the metatarsus; distinct hind toe and claw. Toes only slightly connected at the base. This genus is monotypic and confined to Australia.

In the *Catalogue of Birds* the family *Charadriidæ* included the Turnstones, Oystercatchers, Lapwings, Plovers, Stilts, Ibis-billed Plover, Sandpipers, Snipe, and Phalaropes. As already indicated, I cannot accept this collection as representing one natural family, and am here restricting the family *Charadriidæ* to the Lapwings and Plovers. The Lapwings seem to form quite a natural group which might be considered a subfamily, while the Plovers may be again subdivided.

Sharpe in the British Museum *Catalogue* placed all the species I would include in the family *Charadriidæ* in two subfamilies, which he separated by means of the nature of the covering of the metatarsus, thus (p. 90):—

Lobivanellinæ: tarsus transversely scaled in front, but reticulated behind.

Charadriinæ: tarsus reticulated, or with hexagonal scales both in front and behind.

His third subfamily *Peltohyatinæ*, I do not consider closely related.

Inasmuch as the wattled Lapwings were distributed by means of these definitions, some in the *Lobivanellinæ* and others in the *Charadriinæ*, while

THE BIRDS OF AUSTRALIA.

mature specimens of *Lobivanellus lobatus* of Sharpe (now *Lobibyx novæ-hollandiæ*) answered better to the diagnosis of his *Peltohyatinæ* than to that of *Lobivanellinæ*, of which subfamily it was the typical form, some attempt at emendation was compulsory.

In the *Geographical Distribution of the Charadriidæ*, Seebohm considered as of generic rank, aggregations which must be now recognised as of much greater value. He there utilised *Charadrius* for the Plovers, splitting the Lapwings into two genera—*Vanellus* and *Lobivanellus*—separating these by means of the wattles, though he admitted this was an arbitrary and unsatisfactory division. There can be little doubt that the Lapwings form a natural group of sedentary birds almost confined to the Tropics and sub-Tropics, with a few scarce stragglers ranging to the Temperate Zone. They present a somewhat uniform appearance and are notable for the possession of crests, facial wattles, or spurs, or some combination of these. When the spur is absent there still persists a bony knob at the bend of the wing. Examination of the metatarsus-covering of the Australian Lapwings led to the criticism of all the Lapwings; and the fact being noted that they seemed to show variation in this respect, all the juvenile-specimens available were carefully examined, with the following interesting results: all the young Lapwings I have yet noticed show a metatarsus having the front covered with transverse scutes, the sides and back being covered with hexagonal scales, the middle row of the back somewhat larger. As growth progresses, in some species the transverse frontal-plates break up while the hexagonal side- and back-covering remains unchanged: by this means a metatarsus apparently reticulated throughout is visible in the mature bird. In other species the juvenile-features do not alter, and a metatarsus scutellated in front and reticulated behind is observed. In others, the frontal aspect remains transversely scuted, while the hexagonal scales on the back fuse so as to give the appearance of scaling on the hind surface. Examination of a few specimens of almost any Lapwing will show these processes; it should be noted that the same process is constantly followed in a species.

The young of Plovers generally have the metatarsus reticulate throughout, and commonly the adults show the same characters. I will deal with the exceptions later when writing about these birds. Sharpe's subfamily *Lobivanellinæ* included the genus *Oreophilus*. This South American genus is not a Lapwing though it has the metatarsus scutellated in front: it is easily separated from these by means of its very long-pointed wing and long thin bill which is present in the nestling, when it is quite unlike that of a juvenile Lapwing. It might be noted that Gray (*Handl. Gen. Species Birds*

ERYTHROGONYS.

Brit. Mus., pt. III., p. 19, 1871) placed *Oreophilus* in his family *Glareolidae*, next to the genus *Cursorius*.

The wing of a Lapwing has a rounded appearance when contrasted with that of a Plover; in the latter the first primary is always the longest, and a regular gradation of the primaries is noticeable; in the Lapwing the first primary is rarely longest—but if it is, the succeeding two or three are sub-equal, and consequently the wing never has the pointed aspect of that of a Plover.

Key to the Species.

- A. Black band on breast, wide *E. cinctus cinctus*, p. 35.
B. Black band on breast, narrow *E. cinctus mixtus*, p. 38.

ERYTHROGONYS CINCTUS CINCTUS.

RED-KNEED DOTTEREL.

ERYTHROGONYS CINCTUS Gould, Synops. Birds Austr., pt. iv., pl. 73, 1838 ; New South Wales.

Erythronyctes cinctus Gould, Synops. Birds Austr., pt. iv., pl. 73, 1838 ; *id.*, Proc. Zool. Soc. (Lond.) 1837, p. 155, 1838 ; *id.*, Birds Austr., Vol. VI., pl. 21, 1841 ; *id.*, Handb. Birds Austr., Vol. II., p. 240, 1865 ; Ramsay, Proc. Linn. Soc. N.S.W., Vol. I., p. 188, 1877 ; *id.*, *ib.*, Vol. II., p. 197, 1878 ; *id.*, *ib.*, Vol. VII., p. 412, 1883 ; *id.*, Tab. List Austr. Birds, p. 20, 1888 ; North, Austr. Mus. Cat., No. 12, p. 307, 1889 ; Cox and Hamilton, Proc. Linn. Soc. N.S.W., ser. 2, Vol. IV., p. 419, 1889 ; Legge, Austr. Assoc. Adv. Sci., Vol. IV., p. 977, 1892 ; Campbell, *ib.*, Vol. V., p. 437, 1893 ; Sharpe, Cat. Birds Brit. Mus., Vol. XXIV., p. 125, 1896 ; Hall, Key Birds Austr., p. 80, 1899 ; Campbell, Nests and Eggs Austr. Birds, p. 780, 1901 ; Lyons, Emu, Vol. I., p. 136, 1902 ; Berney, *ib.*, Vol. II., p. 212, 1903 ; *id.*, *ib.*, Vol. IV., p. 46, 1904 ; Hall, Key Birds Austr., p. 80, 1906 ; Berney, Emu, Vol. VI., p. 111, 1907 ; Mathews, Handl. Birds Austr., p. 23, 1908.

Erythronyx cinctus Gould, Synops. Birds Austr., pt. iv., pl. 73, 1838.

Vanellus rufiventer Lesson, Echo du Monde Savant, 11th year, No. 9, col. 207, 1844 ; *id.*, Descr. Mamm. Ois., p. 239, 1847.

Erythronyx cincta Reichenbach, Natur. Syst., Vögel, p. xviii., 1852.

Vanellus cinctus Schlegel, Mus. Pays-Bas, Vol. IV., Cursores, p. 59, 1865.

Erythronyx rufiventris Gray, Handl. Gen. Spec. Birds, pt. III., p. 12, 1871.

Charadrius rufiventris Seebohm, Geogr. Distr. Charadr., p. 108, 1887.

Charadrius rufiventer id., *ib.*, pl. III.

Erythronyx cinctus cinctus Mathews, Nov. Zool., Vol. XVIII., p. 214, 1912

DISTRIBUTION. Queensland, New South Wales, South Australia.

Adult. Differs from *E. c. mixtus* in being lighter above and in having the chestnut flank-feathers more conspicuous. The black band on the breast is also somewhat wider. Total length 190 mm. ; culmen 21, wing 110, tail 45, tarsus 43.

Nestling, three weeks old. "The crown and back are brown, each feather being tipped with a lighter shade, which give it a mottled appearance. All the under-surface is white, including the throat, and also a band just behind the crown extending to the back of the eye, and adjoining this white band, but behind it, is a black one extending to the lower part of the eye. The primaries are black slightly tipped

RED-KNEED DOTTEREL.

with white. The secondaries are also black and tipped boldly with white, and also white at the base, the amount varying in each feather. The lesser and median wing-coverts are mostly white, with a few brown feathers just coming, and a small patch of white on the spurious wing. Humeral feathers dark brown, tipped with a lighter shade. The tail feathers are black, tipped with lighter brown; under tail-coverts white, with a few brownish-black spots. Beak yellowish for about half its length, the end being black. The nasal groove is more than half the length of the beak. Feet yellowish and toes black.”*

Nest. None is made; the eggs are placed in a slight depression in the ground, on the edge of a large inland lagoon (Ramsay).

Eggs. “Clutch four; ground colour varies from light to dark stone, thickly covered all over with irregular angular and curved hair lines, and irregular shaped markings of black, which cross and re-cross each other in various directions, the lines vary in thickness from that of a fine hair to that of coarse thread, on the thicker end here and there they loop and form tangles; axis 29-31 mm., diameter 23” (Ramsay).

Breeding-season. October, November, and December (Ramsay).

MR. CHARLES BELCHER tells me this bird has been shot near Werribee, on the shores of Port Phillip Bay, Victoria, but it is a very rare occasional visitor to the south of Victoria.

“They visit the Mudgee district usually in April and May, young birds of the year being amongst the number. On arrival they are usually in poor condition, but after a week or two on the flooded ploughed lands they become balls of fat.” (Cox and Hamilton.)

Adult and nestlings were procured in the country round Lake Eyre by Lyons in December, 1901.

“This smart-looking Dottrel is fairly common from December to May in this district [Richmond, Queensland], always at the waters edge and generally in couples. I have seen as many as five at a dam, but you could not say they were together.”†

The same author says: “An occasional visitor that never seems to settle down and make itself at home. You are likely to come across it during any month of the twelve, but it certainly favours the period November to April, though curiously enough, the most I ever saw together—ten at one comparatively small waterhole—was in August. Usually they are seen singly or in pairs, rarely four or five together.”‡

Gould,§ who saw it on the Hunter, Mokai, and Namoi Rivers in October, November, and December, says: “I seldom saw more than two together, and these were almost always male and female; they appear to prefer soft muddy banks to the stony or shingly margins of the rivers. It is a most showy and active little bird, and is so tame that I had not the slightest trouble in shooting as many as I pleased. Its actions and manners are very peculiar, and partake both of those of the Dottrell and the Sandpiper; having the

* Le Souëf, *Emu*, Vol. I., p. 136, 1902 (Kalamurina, South Australia).

† Berney, *ib.*, Vol. II., p. 212, 1903.

‡ Berney, *ib.*, Vol. VI., p. 111, 1907.

§ *Handb. Birds Austr.*, Vol. II., p. 240, 1865.

THE BIRDS OF AUSTRALIA.

stooping carriage of the former, and the quick bobbing motion of the head and tail of the latter; its olive-green plumage and long tertiaries also ally it to the Sandpipers."

The history of this species is given thus by Seebohm in the *Geographical Distribution of the Charadriidæ*, p. 109: "The Australian Four-toed Dotterel was originally described by Temminck (*Cat. Syst. Cab. d'Orn.*, pp. 172, 259) in 1807 as *Le Vanneau Nain de la Nouvelle Galle Meridionale*, but it did not receive a Latin name until it was re-discovered by Gould, who called it the Red-Kneed Dotterel and gave it the scientific name of *Erythrogonys cinctus*. Lesson afterwards discovered that the genus was a hopelessly bad one, and that the new Australian species belonged to the same genus as the South American Dotterel to which he had given the same specific name. The *Vanellus cinctus* of Lesson, dating 1826, though superseded by *Charadrius modestus* of Lichtenstein, dating from 1823, nevertheless supersedes *Erythrogonys cinctus* of Gould, dating only from 1837, so that Lesson was obliged to re-name Gould's species."

This statement is not only partly inaccurate, but Seebohm's treatment was also bad. He called the bird *Charadrius rufiventris*, and gave a plate of it. Assuming the above statement as correct, as Seebohm did not accept Lesson's generic disposition in *Vanellus*, he should have reverted to Gould's name. According to Seebohm, Lesson renamed Gould's bird because he concluded it was a *Vanellus*; but if it was not a *Vanellus* there was no need to reject Gould's name. When I wrote up my "Reference List" (*Nov. Zool.*, Vol. XVIII., p. 214, 1912), I accepted Seebohm's statement but upon referring to the *Echo du Monde Savant*, I find that the above was written by Seebohm without any such reference. In the *Echo du Monde Savant*, 11th year, No. 9, col. 207, 1844, Lesson described as a new species, without any comment whatever, *Vanellus rufiventer*. Consequently, Seebohm's explanation was imaginary.

As regards the early history of the bird Seebohm's account may be accurate. In the *History of the Collections of Natural History of the British Museum*, Vol. II., p. 148, 1906, Sharpe identified the Watling Drawings, No. 249 and 250, as being of this bird, but his identification was quite erroneous, the figures being beautiful representations of *C. melanops* Vieillot ! !

Its late discovery and its peculiar features have combined to free it from nomenclatural troubles, the only synonym of Gould's name being Lesson's, as above noted. Instead of being a "hopelessly bad genus," as Seebohm expressed it, I consider it a peculiarly well-characterised one, and its synonymy shows this up well, as after Lesson's description as a *Vanellus* it has only once been again referred to that genus, and that was by Schlegel, probably the greatest genus- and species-lumper ornithological science has yet possessed.

ERYTHROGONYS CINCTUS MIXTUS.

WESTERN RED-KNEED DOTTEREL.

(PLATE 128.)*

ERYTHROGONYS CINCTUS MIXTUS Mathews, Nov. Zool., Vol. XVIII, p. 215, 1912; North-west Australia.

Erythrogonyys cinctus Hall, Emu, Vol. II., p. 64, 1902; Carter, *ib.*, Vol. III., p. 175, 1904; Hartert, Nov. Zool., Vol. XII., p. 200, 1905; Ingram, Ibis 1907, p. 393; *id.*, *ib.* 1909, p. 614; Mathews, Emu, Vol. IX., p. 54, 1909; Grant, Ibis 1910, p. 183.

DISTRIBUTION. West Australia; Northern Territory.

Adult male. Head, sides of face, hind-neck, upper mantle, and a broad band across the breast black; back and wings olive-brown like the middle of the rump, upper tail-coverts, and middle tail-feathers; a portion of the outer edge of the wing, white; primary-coverts and primary-quills brown, the latter paler on the inner webs and becoming white at the base, the inner primaries white at the tips and fringed with white on the inner webs; secondaries dark brown at base with broad white tips, the long innermost secondaries like the back; outer tail-feathers white, the outermost pair edged with olive-brown on the outer web near the tip; throat and fore-neck white like the lower sides of neck, abdomen, and axillaries; the long feathers on the sides of the body chestnut, edged and tipped with white; some of the feathers adjoining the pectoral band black, edged with white on the outer web; flanks, sides of rump, and under tail-coverts white, with dark centres to the feathers at the tip, more or less mixed with chestnut; inner under wing-coverts white, the long ones with a brown spot at the tip, the marginal coverts blackish; "Bill, culmen, and distal third black, remainder red; iris brown; feet and tarsi blue; knees and tibia red" (J. P. Rogers). Total length 174 mm.; culmen 22, wing 108, tail 46, tarsus 41.

Adult female. Similar to the adult male, but has the crown of the head brown.

Young. General colour of the upper-parts earth-brown, including the head, back, wings, and middle tail-feathers, with pale edges to the upper wing-coverts, the dark and light patterns on the wing similar to the adult; throat and general under-surface white, including the middle of the breast, with a slight indication of the black pectoral band on the sides of the latter, and the chestnut flank-feathers appearing.

Another immature example, rather more advanced in age, has the upper wing-coverts uniform without any pale edges, the cheeks, ear-coverts, and a band on the hind-neck inclining to black, the pectoral band more pronounced on the sides of the breast and faintly indicated across the middle of the latter, the chestnut on the sides of the body well marked, under wing-coverts for the most part white.

A further specimen shows a still greater advance, in having the pectoral band complete in form but brown in colour, with a few white feathers intermixed, the dusky-brown on the top of the head still retained, the black on the under wing-coverts increased as also the black on the sides of the breast.

* The Plate is lettered *Erythrogonyys cinctus*.



J G Keulemans. del.

Witherby & Co

†
ERYTHROGONYS CINCTUS
(*RED-KNEED DOTTEREL*)

WESTERN RED-KNEED DOTTEREL.

Another specimen, which appears to be a year old, has nearly gained the adult-plumage and has the head, sides of face, and hind-neck black with a few brown feathers remaining; the pectoral band shows similar colours.

Nest. Well concealed in a tuft of samphire bush (Carter).

Eggs. Clutch, four (Carter).

Breeding-season. May (Carter).

MR. TOM CARTER sends me the following: "This species is not often seen, as in my residence of 25 years in West Australia I have only met with it on three occasions, viz., on October the 20th, 1899, a pair of adult birds with three immature, were seen on the edge of a large pool on my run, 30 miles from the coast, at Mauds Landing. On May the 2nd, 1900, a nest containing four eggs, on the point of hatching, was found in a tuft of samphire bush on an island of the flooded salt marsh at Mauds Landing. The nest was well concealed. On March the 20th, 1906, I shot a specimen on the edge of one of my stock tanks at Broome Hill, 160 miles inland."

Mr. J. P. Rogers* writes: "I always see this species on the edge of a clay-pan, but never on the banks of the river, with the black-fronted Dottrel. To-day [6/2/1900] I saw one crossing a narrow neck of water six yards wide. It tried to wade, but finding it too deep it swam across with ease. While standing on the bank they often bow or duck their heads with a slow motion."

The type-male figured and described was collected by Mr. J. P. Rogers on Parry's Creek, North-west Australia, January 10th, 1909.

* *Emu*, Vol. II., p. 64 1902.

GENUS—LOBIBYX.

LOBIBYX Heine, Nomencl. Mus. Hein., p. 334, 1890 .. Type *L. novæ-hollandiæ*.
Lobivanellus Reichenbach, Nat. Syst., Vögel, p. xviii.,
 1852 (not of Strickland, 1841) Type *L. novæ-hollandiæ*.

LARGE Lapwings with facial pendant wattles, long spurs at the bend of the wing, long bills, long wings and long legs with small feet.

The bill is typically Vanelline: in front, above and behind the eyes a fleshy wattle which developes into a long pendant lappet in front. The wing is long with the first three primaries about equal; on the bend of the wing a long sharp spur occurs which is smaller in the female. The legs are long and the feet small, the metatarsus being over twice the length of the middle toe; the metatarsus is transversely scaled in front, and in mature specimens apparently similarly covered behind.

In the *Catalogue* of the Birds in the British Museum, Vol. XXIV., the genus *Lobivanellus* contained two Australian species and two African species. In the *Nov. Zool.*, Vol. XVIII., p. 4, 1911, I showed that *Lobivanellus* could not be used for this group as it must be restricted to the group called *Sarcogrammus* in that work. The erroneous usage of *Lobivanellus* had been previously pointed out by Gray (1871) and Seebohm (1887), and consequently Heine had provided *Lobibyx* for the group under consideration. As the type of *Lobibyx* was the Australian *L. lobatus* (= *novæ-hollandiæ*), I did not examine at that time the African species associated with the Australian.

Upon examining the African birds I find they differ at sight in their longer metatarsi and their weaker feet. As a closely-allied genus, *Xiphidiopterus*, was also credited with one African species and one Malayan species, it seemed necessary to look at these, when a parallel case was observed, the African species having a longer metatarsus and weaker feet than the Malayan. Moreover in general coloration the African *Lobibyx* and the African *Xiphidiopterus* are similar and both have green legs and feet, while the Australian *Lobibyx* and the Malayan *Xiphidiopterus* agree better in general coloration and both have purple-red legs and feet. The artificiality of Sharpe's grouping

LOBIBYX.

seems apparent from the fact that while *Lobibyx* (= *Lobivanellus* Sharpe) is placed in the subfamily *Lobivanellinæ*, *Xiphidiopterus* becomes a member of the subfamily *Charadriinæ*. I would restrict *Lobibyx* to the Australian species and would introduce *AFRIBYX* for the African species with *A. lateralis* Smith (= *Vanellus lateralis* Smith) as type. In the same way I would restrict *Xiphidiopterus* to the African species, and for the Malayan species—called *Xiphidiopterus cucullatus* (Temminck) but whose correct specific name is *tricolor* Horsfield—I would propose *ROGIBYX*. In the British Museum *Catalogue*, *Vanellus tricolor* Horsfield was rejected on account of a prior *tricolor* Vieillot, but that author introduced his species as *Charadrius tricolor*, and as they belong to different genera there is no valid reason for the suppression of Horsfield's name. I would suggest that the Australian species *Lobibyx novæ-hollandiæ* and *Lobibyx miles* are more closely related to *Rogibyx tricolor* than to the African species they have hitherto been associated with. Whether the Malayan *tricolor* is generically distinct or not would seem debateable, as although I am utilising restricted groupings, the size of wattles and spurs would be scarcely considered as governing genera in other families of birds. Seebohm noted that the species with large facial decorations had usually well-developed spurs, while spurless forms usually lacked wattles, but that exceptions occurred. If the wattles were developed to protect the eyes from the spurs, it is quite easy to conclude that similar forms might be evolved in distant localities, and consequently that the similarity of the African "*Lobivanellus*" to the Australian *Lobibyx* is due to convergence and is not a case of congeneric affinity. The Lapwings would form an interesting study as the three Australian genera suggest hypothetical relationship, thus: *Lobibyx* is very large with well-developed spurs and facial wattles—when adult it has long legs, but comparatively short ones in the nestling; *Zonifer* is not quite as large, with a small facial wattle and only a hard knob instead of a spur, and has short legs; *Erythrogonys* is very small, has no facial wattle, and only an indistinct knob, though long legs. The last mentioned has a hind toe as the first, while *Zonifer* has no hind toe; yet *Zonifer* approaches closer in coloration to *Lobibyx* than *Erythrogonys* does. From this and the study of other Lapwings, Seebohm's conclusion that in this Order so-called structural differences are of less importance than coloration, seems to find confirmation. Certainly the Lapwings are more naturally grouped by means of coloration than by observing structural differences without aid of colour.

Frohawk (*Bull. Brit. Orn. Club*, Vol. XIV., p. 62, 1904) found that the wing-formation in the sexes of *Vanellus vanellus* (Linné) differed: in the male the second primary equalled the fourth, the third being longest, while

THE BIRDS OF AUSTRALIA.

the first was equal to the seventh; in the female the second and third primaries were equal and longest, while the first was equal to the fourth. Such a note suggested similar differences might be found in other Lapwings, so I instituted comparisons with my own birds. I find that very probably there is a difference between the sexes in the wing-formation, as will be noted under the different species.

Key to the Species.

- A.* Facial wattles small, hind-neck, collar, and
sides of breast black *L. novæ-hollandiæ*, p. 44.
- B.* Facial wattles large, hind-neck, collar, and
sides of breast white.
- a.* Larger and darker *L. miles harterti*, p. 55.
- b.* Smaller and lighter *L. miles personatus*, p. 52.

LOBIBYX NOVÆ-HOLLANDIÆ.

SPUR-WINGED PLOVER.

(PLATE 129.)*

VANELLUS NOVÆ-HOLLANDIÆ Stephens, in Shaw's Gen. Zool., Vol. XI., pt. II., p. 516, 1819; New South Wales.

Tringa lobata (not Linné) Latham, Ind. Orn., Suppl., p. lxxv., 1801.

Vanellus lobatus Vieillot, Nouv. Dict. d'Hist. Nat., Vol. XXXV., p. 209, 1819.

Vanellus novæ-hollandiæ Stephens, in Shaw's Gen. Zool., Vol. XI., pt. II., p. 516, 1819.

Charadrius lobatus Wagler, Syst. Av., Charad., sp. 51, p. 76, 1827.

Charadrius gallinaceus *id.*, *ib.*, sp. 50, p. 75.

Vanellus galinaceus Jardine and Selby, Ill. Ornith., Vol. II., text to pl. 84, 1830.

Vanellus gallinaceus *id.*, *ib.*, on plate.

Lobivanellus gallinaceus Strickland, Proc. Zool. Soc. (Lond.) 1841, p. 33.

Lobivanellus lobatus Gould, Birds Austr., Vol. VI., pl. 9, 1842; Sturt, Narr. Exp. Centr. Austr., Vol. II., App., p. 48, 1849; Aitkin, Papers Proc. Roy. Soc. Van Diemen's Land 1854, p. 489; Gould, Handb. Birds Austr., Vol. II., p. 218, 1865; Ramsay, Ibis 1866, p. 334; *id.*, *ib.*, 1867, p. 419, pl. IX., fig. 2; Legge, Papers Proc. Roy. Soc. Tasmania 1874, p. 33, 1875; Ramsay, Proc. Linn. Soc. N.S.W., Vol. I., p. 187, 1877; *id.*, *ib.*, Vol. II., p. 197, 1878; Seebohm, Geogr. Distrib. Charadr., p. 190, 1887; Buller, Ibis 1888, p. 283; *id.*, Birds New Zeal., 2nd ed., Vol. II., p. 13, 1888; Ramsay, Tabl. List Austr. Birds, p. 19, 1888; Kirk, Ibis 1889, p. 297; *id.*, Trans. New Zeal. Inst. 1888, Vol. XXI., p. 231, 1889; North, Austr. Mus. Cat., No. 12, p. 300, 1889; Cox and Hamilton, Proc. Linn. Soc. N.S.W., Vol. XIV., p. 419, 1889; Buller, Trans. New Zeal. Inst. 1892, Vol. XXV., p. 60, 1893; Legge, Austr. Assoc. Adv. Sci., Vol. IV., p. 978, 1892; Campbell, *ib.*, Vol. V., p. 429, 1893; Sharpe, Cat. Birds Brit. Mus., Vol. XXIV., p. 139, 1896; North, Birds County Cumberl., p. 109, 1898; Hall, Key Birds Austr., p. 81, 1899; Keartland, Birds Melb. Distr., p. 114, 1900; Campbell, Nests and Eggs Austr. Birds, p. 781, 1901; Legge, Emu, Vol. I., p. 86, 1902; Lyons, *ib.*, p. 138; MacLaine, *ib.*, Vol. III., p. 63, 1903; Littler, *ib.*, p. 216, 1904; North, Agric. Gaz. N.S.W., 1905, p. 1014; Buller, Suppl. Birds New Zeal., Vol. I., p. 173, 1905; Sharpe, Hist. Coll. Brit. Mus., Vol. II., p. 147, 1906; Hall, Key Birds Austr., p. 81,

* The Plate is lettered *Lobibyx lobatus*.



J. G. Keulemans, del.

Witherby & Co

$\frac{1}{2}$
LOBIBYX LOBATUS.
(SPUR WINGED PLOVER).

SPUR-WINGED PLOVER.

1906 ; Batey, Emu, Vol. VII., p. 13, 1907 ; Mathews, Handl. Birds Austral., p. 23, 1908 ; Littler, Handb. Birds Tasm., p. 124, 1910 ; Burrell, Emu, Vol. IX., pl. XIII., 1910 ; Legge, *ib.*, Vol. X., p. 51, 1910.

Pluvianus lobatus Blyth, Journ. As. Soc. Bengal, Vol. XII., p. 179, 1843.

Chettusia lobata Gray, Genera Birds, Vol. III., p. 541, 1847.

Chettusia gallinacea id., *ib.*

Lobivanellus personatus (not Gould) Kirk, Ibis 1888, p. 45 ; *id.*, Trans. New Zeal. Inst. 1887, Vol. XX., p. 33, 1888.

Lobibyx lobatus Heine, Nomencl. Mus. Hein., Ornith., p. 334, 1888.

Lobibyx novæ-hollandiæ Mathews, Nov. Zool., Vol. XVIII., p. 5, 1911 ; *id.*, Emu, Vol. X., p. 320, 1911 ; *id.*, Nov. Zool., Vol. XVIII., p. 215, 1912.

DISTRIBUTION. Queensland, New South Wales, Victoria, Tasmania, South Australia (New Zealand, accidental).

I have specimens of this and the next species, shot on the same day in Queensland.

Adult male. Back, scapulars, and wings olive-brown, becoming paler and inclining to ash-colour on the outer wing-coverts ; outer, median, and primary-coverts black as also the primary-quills ; the latter brown at the tips and paler on the inner web at the base of inner primaries ; secondaries for the most part black with grey at the base and white on the inner web, the grey and white increasing in extent on the inner ones, two of which are edged with white at the tip ; the innermost secondaries like the back ; tail white with a subterminal broad black band, and white or greyish-brown tips ; head, hind-neck and a collar skirting the upper-mantle black like the patch on the sides of the breast ; throat, cheeks and sides of neck white like the entire under-surface, including the under wing-coverts, axillaries, and under tail-coverts ; bill, wattles, and iris canary-yellow ; feet and legs very dark crimson ; spurs canary-yellow with black tips. Total length 360 mm. ; culmen 34, wing 245, tail 107, tarsus 81.

Adult female. Similar to the adult male.

Nestling, in down. General colour of the upper-surface black suffused with buff ; wings broadly lined with buffy-white ; forehead ochreous-buff ; a black line over the eye, which widens into a band on the upper hind-neck, this being followed by a white collar which extends in a narrow line on to the cheeks ; throat and under-surface dull-white becoming tinged with buff on the under-tail and thighs ; hinder portion of the thighs lined with black ; a yellow wattle above and in front of the eye.

Nest. A depression in the ground.

Eggs. Clutch, three to four ; ground-colour green, heavily blotched with spots of dark purple-brown and lavender ; axis 50-54 mm. ; diameter 36 to 36.5.

Breeding-season. July (Belcher), August (Cox and Hamilton, Mudgee), September to January (Ramsay).

“THIS species has long since become scarce, if not quite extirpated in the neighbourhood of Sydney, although plentiful some fifty miles inland. It shows a decided preference for the marshy parts of the country, on the borders of lakes, swamps, and lagoons, and the grassy margins of rivers. On the edge of Lakes Bathurst and George, and Hexham Swamps, they are particularly numerous.

THE BIRDS OF AUSTRALIA.

"During the day-time they are mostly found in flocks of from five to fifty in number, perhaps crowded together on the edges of a lagoon, basking in the sun, or on remarkably hot days under the shade of some tree. Night is the Plovers' time for feeding; then they become remarkably noisy, and their loud creaking choruses, sometimes carried on by two or three individuals, are more often heard. A sudden stop puts an end to the performance, when all is again quiet, and nothing heard save a melancholy call note as they follow one another in twos and threes to some distant part of the fields. They are seldom heard in the day-time, except when disturbed.

"The Spur-winged Plover breeds during September and the two following months, in some localities a month earlier or later. The eggs, which are four in number, are placed with the thin ends inwards, and laid upon the ground by the side of some tuft of grass or rushes, in a slight hollow made for their reception, with occasionally a few blades of grass placed under and around them, but as often as not without any sign of a nest."*

Captain S. A. White writes from South Australia: "This bird seems to adapt itself to almost any surrounding, for they are found in the plains of our dry interior, where they seem to thrive as well as they do on the rich flats and swamps of the Reed-beds. Last year a bird selected a small tuft 18 inches across, situated in a swamp on my property. When the bird was disturbed from its nest, she slipped off quietly into the water and paddled off among the rushes. A slight depression is generally selected to lay in, without any nest. When the young are hatched, they are so like their surroundings that it is very difficult to detect them."

Mr. Edwin Ashby reports it "Very common, where ever I have been on the Murray River. Small flocks occur on the creeks with permanent water on the eastern slopes of the Adelaide Hills. I have also shot them near Saddleworth, South Australia. I have a clutch of eggs from Snug Cove, North Kangaroo Island."

Mr. J. W. Mellor says: "A few were seen on one island [off South Australia] and a nest with 4 eggs was found; the nest was an impression in the sand close to the shore, and in no way concealed, but the spotting and colour of the eggs exactly fitted in with the surrounding place and made them almost indistinguishable. The birds were very wary and were not to be seen about, although the eggs were warm . . . It was not long, however, before we heard their piping call some distance away on an island, as if calling our attention away from the nest. On another island several young ones were seen that had not more than just hatched out."

* Ramsay, *Ibis* 1867, p. 419.

SPUR-WINGED PLOVER.

The same writer sends me the following: "A bird living in the open fields and short grassy country, where it can see for miles around, and give a warning note of the approach of any enemy. I have on many occasions been greatly vexed, while stalking duck and other game, by this bird flying over and giving the warning notes, as invariably the game is off like a shot and becomes very wild. They have a great habit of calling one away from their nest by making a great noise when one is near their eggs. And as a double surety, they will dart down at the intruder when he is away from the nest, which makes him more positive that the eggs are near. After much time has been spent in searching about without success, the eggs are eventually found far away from that spot. There are generally three or four to a clutch.

"These birds are nocturnal as well as diurnal, and their call is a familiar sound over the swamp, as one sits, waiting for a shot at duck, at some lonely pool. They feed on all kinds of insect life, and are especially useful in the farming and grazing districts in keeping down insect pests."

Lyons (*l.c.*) records seeing four of these Plovers at Malkuni, Central Australia.

Frank S. Smith reports it common in Victoria, "On the open, western plains between the Ararat-Geelong and the Geelong-Terang Railways. The plains extend for thousands of acres, bare of timber, except where artificially planted, and dotted with lakes, swamps and little water-courses. Flocks of a score or more are always in evidence, together with as many *Zonifer tricolor*. I noticed a curious fact, that this latter is more careful of her young than the other. I have found the young of *Zonifer* squatted so closely that a stamped foot right beside them failed to move them, and one allowed me to pick it up without moving, all the four were scattered around and crouched motionless against tufts of grass. On the other hand, I have found the Spur-wing crossing a bare road, under the nose of my horse, with a tiny young one toddling after her."

From Northern Victoria Mr. C. J. Christian says: "Up here on the plains one sees it occasionally and then only in pairs, and only in swampy places, never on the plain like *Zonifer tricolor*. It is a quieter bird as a rule than the latter and seems to me to delight in standing on one leg in a reedy pool for a long time as if meditating. It seems to go about, when it walks, in a much quieter way than *Zonifer tricolor*, which generally makes a noise when moving about and when on the wing. They, however, are not always so quiet. When there are eggs or young to protect they will drive away a Wedge-tailed Eagle (*Uroaetus audax*). Of course, in an attack like this there are generally 5 or 6

THE BIRDS OF AUSTRALIA.

plovers, one making an overhead attack and the others underneath. I have seen them attacking the *Circus gouldi* and beating him off. On September 19th, 1909, I found a nest containing three eggs."

Mr. Charles Belcher records: "This bird is a lover of swampy localities and is well distributed over Victoria. To a limited extent it is migratory, and in autumn may be found in large flocks. The birds pair off long before the winter months. I have found eggs in July, but most are laid in August and September. The Spur-wing Plover flies long distances by night. At times I have heard them high up over Central Melbourne. The cry is much louder and harsher than that of the Black-breasted Plover, and I do not think the latter bird flies about so much at night. The Spur-wing Plover lays three eggs, sometimes four; the nest is a shallow depression on land rising out of a swamp or, quite as frequently, in an open paddock. I do not know any part of Victoria where the species may not be found. It is peculiarly partial to river estuaries and lagoons near the sea."

Dr. G. Horne, of Victoria, says: "I watched these birds on Kangaroo Island for a long afternoon. Four of them were going methodically over a fallow paddock picking up insects. They did not seem to post a sentinel but no passer by came within three hundred yards without the loud warning cry being given and taken up by its mates. One of our party approaching where I suppose a nest was hidden, had his hat struck by the wing-spur in a swift downward rush that the bird made at the intruder. Certainly the whirr with which it sweeps by makes one feel that it is not an adversary to be trifled with. It seems to be watchful by night as well as day, for at Lancefield during some military manœuvres I repeatedly noticed it signalling the movements of squads along a road near which it had stationed itself.

"Our pair we have kept for nearly four years and specially on moonlight nights do they give their shrill warning of the least disturbance. Now for the first time they are preparing to nest and have fashioned a shallow hole from which they have carefully removed all the stones and lined it with twigs.

"They are very savage and attack with loud cries anyone entering the little garden in which they run pinioned."

Miss Fletcher of Tasmania gives me the following account: "These birds are very plentiful around the marshy lands of the Cleveland district where they found abundant food. From thence they wander to the adjacent rises or paddocks, and are keen hunters after the destructive underground grass-grub. They feed a great part of the night and also in the early morning.

SPUR-WINGED PLOVER.

"I once witnessed an interesting scene in the Plover world which reminded me of the dances of the Lapwing about which I have read. Several Plovers were evidently choosing their mates for the coming season. The flock consisted of twenty or so and the greater number of these were arranged in a part circle, or rather a semi-circle. Across the space from one side to another danced (I cannot say hopped or walked) three pairs of Spur-wing Plovers. They would meet in the centre turn completely round to one another, then almost bow and retreat to the lines again. This was repeated several times, the birds on the half circle (which were apparently older couples) keeping up a peculiar noise a little different from their usual cry. Then the flock would rise, settle a little way off and repeat the performance. After doing this several times they all rose and settled further down nearer the lagoon and began feeding.

"They nest very early, as the dates shown below will prove, and my observations tend to show two clutches are reared in the season. When they have the little ones about with them they fly in circles above the intruder, and their call has a different note in it to their ordinary screeching. When the intruder moves somewhat away, another call is used which is apparently for collecting the young together again as these latter will occasionally be heard emitting a tiny squeak. I have often come across the clutches of little ones, and difficult it is to detect them when they are in down and crouched on the ground.

"End of July, 1901. Nest with three eggs.

30/10/1908. Set of four. Bird had been sitting about three days.

10/8/1909. Nest with four eggs.

11/8/1909. Some destroyed by crows.

15/8/1910. Nest of four eggs trodden on by sheep.

18/8/1910. Nest of ditto chipping.

27/8/1910. Spur-wing with young.

27/8/1909. Nest of same with four eggs heavily incubated.

2/9/1909. Another nest with four eggs chipping.

5/9/1910. Spur-wing sitting on eggs.

10/9/1909. Spur-wing with two young.

10/10/1909. Four young in down about two days old.

25/10/1909. Young almost fully feathered, a little down adhering to under parts; wattles showing. (This one ate garden worms.)

15/10/1910. Spur-wing nest from which young had hatched. Nest was a slight hollow close to tussock. Had a few tiny reeds and a little sheep manure round it. These birds are fond of placing their nests near this manure. Occasionally they put a little of the manure in the nest or along the edge.

30/10/1908. Set of four eggs. Bird had been setting about three days.

13/12/1910. Four Spur-wings, very young, found crouching in short grass."

THE BIRDS OF AUSTRALIA.

Mr. Frank Littler * writes : " Shooting begins 1st February, ends 30th June. This fine bird mostly confines itself to open, swampy localities bordered by grassy uplands. Except during the immediate breeding season, it moves in flocks, which vary greatly in size . . . The note of the Spur-winged Plover is a harsh cry, which grows very loud and discordant when the bird is alarmed. The ordinary cry is uttered when on the wing. It moves from one feeding ground to another very often under cover of darkness. On moonlight nights I have, on many occasions, heard flocks passing over Launceston, calling loudly as they flew. Sometimes one flock can be heard calling to another, which answers in quite a different key. I do not know if they have any special time for moving ; I have heard them at all times from 9 p.m. until midnight. This plover is a very courageous bird when there are young or eggs to be defended. Although naturally very shy, it becomes bold and daring in the extreme when real or imaginary danger threatens. In addition to feigning lame or wounded, and doing all in its power to lure the intruder away from its nest, it will boldly attack sheep-dogs and predacious birds. Not only does it fly screaming round them, but right into their faces to turn them from its nest. It does not hesitate to attack man should occasion arise. Its food consists of insect and the like gathered from off the ground of its haunts."

Legge† reports : " This species furnishes an illustration as regards Tasmania of internal migration or ' exodus ' in the southern parts of Australia. Though recorded as inhabiting the island many years ago, it was a rare bird until the ' eighties.' After the great drought in the continent, 1888, it was observed here and there in the midlands, the great Plover district of Tasmania. It gradually increased about Ross and Tunbridge where the flat lands, salt pans, marshes and undulating open sheep runs provided it with a suitable home. It is now about as numerous as the Black-breasted Plover, for it is seldom shot, owing to its wariness and the poor quality of its flesh, and flocks of fifty may be met with after the breeding season when the young have ' packed.' In 1892 a pair appeared on my estate at Cullenswood on the Break-o'-day Plateau, where the species had never been seen before. It had evidently begun to migrate outwards from the midlands. In 1895 it had thoroughly established itself, having taken up its quarters about a large lagoon, where it bred every year, and is now abundant in the district."

In the specimens I have examined I find the males to have the first three primaries subequal, the first probably the longest, while females have the second and third equal and longest, the first equal to the fourth.

This bird was first described by Latham from the Watling Drawings. He chose for its name *Tringa lobata*, and it has been commonly known as

* *Handb. Birds Tasm.*, p. 125, 1910.

† *Emu*, Vol. I., p. 86, 1902.

SPUR-WINGED PLOVER.

Lobivanellus lobatus; but, as I pointed out in the *Nov. Zool.*, Vol. XVIII., p. 5, 1911, there was a prior *Tringa lobata* of Linné (10th ed., p. 148, 1758), and that though this had been observed and corrected by Stephens only eighteen years after Latham's introduction, the fault had not been remedied for nearly a century. This is another bird confined to Australia and consequently has a clean synonymy, *gallinaceus* Wagler being the only additional name.

LOBIBYX MILES PERSONATUS.

LESSER MASKED PLOVER.

(PLATE 130.)*

LOBIVANELLUS PERSONATUS Gould, Birds Austr., Vol. VI., pl. 10, 1842; Cobourg Peninsula.

Lobivanellus personatus Gould, Birds Austr., Vol. VI., pl. 10, 1842; *id.*, Proc. Zool. Soc. (Lond.) 1842, p. 113, 1843; Gray, List Spec. Brit. Mus., pt. III., p. 66, 1844; Gould, Handb. Birds Austr., Vol. II., p. 220, 1865; Ramsay, Proc. Linn. Soc. N.S.W., Vol. I., p. 187, 1877; Seebohm, Geog. Distr. Charadr., p. 188, 1887 (pars).

Chettusia personata Gray, Genera Birds, Vol. III., p. 541, 1847.

Chettusia miles id., Handl. Gen. Sp. Birds Brit. Mus., pt. III., p. 12, 1871.

Lobivanellus miles Ramsay, Proc. Linn. Soc. N.S.W., Vol. II., p. 197, 1878; *id.*, *ib.*, 2nd ser., Vol. I., p. 1099, 1887; *id.*, Tabl. List Austr. Birds, p. 19, 1888 (pars); North, Austr. Mus. Cat., No. 12, p. 301, 1889; Legge, Proc. Austr. Assoc. Adv. Sci., Vol. IV., p. 978, 1892; Campbell, *ib.*, Vol. V., p. 430, 1893; Sharpe, Cat. Birds Brit. Mus., Vol. XXIV., p. 140, 1896; North, Trans. Roy. Soc. South Austr., Vol. XXII., p. 164, 1898; Hall, Key Birds Austr., p. 81, 1899; Campbell, Nests and Eggs Austr. Birds, p. 782, 1901; Kilgour, Emu, Vol. IV., p. 38, 1904; Hartert, Nov. Zool., Vol. XII., p. 200, 1905; Hall, Key Birds Austr., p. 81, 1906; Mathews, Handl. Birds Austral., p. 24, 1908; Ingram, Ibis 1909, p. 614.

Lobibyx miles Heine, Mus. Hein., Ornith., p. 334, 1888.

Lobibyx miles personatus Mathews, Nov. Zool., Vol. XVIII., p. 215, 1912.

DISTRIBUTION. North-west Australia, Northern Territory.

Adult male. Crown of head black; hind-neck, sides of face, ear-coverts, throat, and entire under-surface pure white including the under wing-coverts, axillaries, and under tail-coverts; wings ash-grey; middle of back, scapulars, and the innermost secondaries olive-grey; upper outer-edge of wing white; primary-coverts and primary-quills black, the latter paler on the inner webs and white at the base, some of the outer primaries brown at the ends; secondaries black with grey at the base on the outer web and white on the inner one, the white and grey increasing on the inner secondaries where the black is confined to the tip; tail white with a broad subterminal band of black which is preceded by pale grey and tipped with the same colour—this same colour occupies the outer web of the innermost feathers;

* The Plate is lettered *Lobibyx miles*.



J G Keulemans, del

$\frac{1}{2}$
LOBIBYX MILES.
(*MASKED PLOVER*).

Witherby & Co.

LESSER MASKED PLOVER.

facial wattles larger than in *L. lobatus* and extending over and behind the eye; "Bill yellow, tip brown; iris yellow; lapels and spurs yellow; tarsi and feet purple red; lower end of tibia pink" (J. P. Rogers). Total length 377 mm.; culmen 35, wing 228, tail 95, tarsus 74.

Adult female. Similar to the adult male.

Nest. A depression in the ground.

Eggs. Clutch, four (J. P. Rogers). "Clutch two, of a yellowish-stone ground colour, slightly tinged with olive, with freckles, spots, and larger irregular shaped markings of olive-brown and blackish-brown distributed over the entire surface of the shell, together with a few superimposed spots of dull bluish-black. Axis 41-42 mm.; diameter 33." (North.)

Breeding-season. August to October (Ramsay), March (North—North-west Australia), April (Kilgour—Ord River, North-west Australia), January (Rogers—Parry's Creek, North-west Australia).

My collector, Mr. J. P. Rogers, sends me the following notes from near Wyndham, North-west Australia: "Before the 25th of November, 1908, these birds were in pairs or single, but very few of them were seen. The rain on the 22nd and isolated storms made them more plentiful, so that they were seen in flocks of from 20 to 30 birds. By the end of November they had increased greatly and were seen everywhere. On the 15th of December they mated and split up in pairs. On the 14th of January a nest was found containing two eggs, and two shells out of which the chicks had hatched, although the membrane of the shell was quite soft; the chicks could not be found. The young in the other two eggs could be heard chirping. The nest was simply a hollow under a bunch of grass, and had a little dry grass in the bottom. Both birds were seen at the nest. On the 1st of May, 1909, they were still very plentiful.

"On the 17th May, 1911, a few of these birds were seen at Lallaka, a large swamp on the south side of the Fitzroy River, 40 miles from Derby. Not many were noticed on the River. They usually leave the district about Derby in April and May, but some remain all the year."

The same observer saw the species again on Melville Island on October 11th, 1911; on December 1st a pair were seen at Cooper's Camp; on the 30th of the same month another pair were observed ten miles south-east of Snake Bay; on February 3rd, 1912, they were heard passing.

The bird figured and described was collected at Parry's Creek, North-west Australia, by Mr. J. P. Rogers, on February 16th, 1909.

Under the name of "*Le Vanneau armé de la Louisiane*," this species was first described by Brisson (*Ornith.*, Vol. V., p. 114, 1760) on the assumption that the bird came from Louisiana. In the *Plan. Enl.*, pl. 835, a coloured figure was given, and to this plate Boddaert (*Tabl. Plan. Enl.*, 1783, p. 51) gave the Latin name *Tringa miles*. Gmelin (*Syst. Nat.*, p. 706, 1789) proposed

THE BIRDS OF AUSTRALIA.

the name *Parra ludoviciana* for the same bird. Wagler changed this to *Charadrius callæas* (*Syst. Av. Charadrius*, sp. 52, 1827). Without any attempt at differentiation Gould described *Lobivanellus personatus* as new from Cobourg Peninsula, and used this name continually. When Ramsay wrote up the "Tabular List" in the *Proc. Linn. Soc. N.S.W.*, Vol. II., p. 197, 1878, he correctly synonymised this with the much prior *miles* of Boddaert. Since then until 1912, this synonymy has been accepted. When I made up my "Reference List," I pointed out that the plate in the *Plan. Enl.* agreed better in coloration with the form inhabiting the East Indian Islands, and therefore designated Timor Laut as the type-locality. This course seems to be best, as there can be little doubt that no bird came from North Australia to Europe before 1760, while there was communication between the Spice Islands and Europe at that early date.

The three forms I admit are :—

Lobibyx miles miles (Boddaert); Timor Laut, Moluccas.

Lobibyx miles personatus (Gould); North-west Australia; Northern Territory. Much darker than the preceding.

Lobibyx miles harterti (Mathews); North Queensland. Still darker and larger.

LOBIBYX MILES HARTERTI.

EASTERN MASKED PLOVER.

LOBIBYX MILES HARTERTI Mathews, Nov. Zool., Vol. XVIII., p. 215, 1912; Inkerman, Queensland.

Lobivanellus miles Ramsay, Proc. Linn. Soc. N.S.W., Vol. I., p. 384, 1877; *id.*, *ib.*, Vol. II., p. 197, 1878; Hall, Emu, Vol. II., p. 64, 1902; Cochrane, *ib.*, Vol. III., p. 49, 1903; Berney, *ib.*, Vol. VI., p. 111, 1907; Ingram, Ibis 1908, p. 462.

Lobibyx miles harterti Mathews, Nov. Zool., Vol. XVIII., p. 215, 1912.

DISTRIBUTION. Queensland.

Adult male. Differs from *Lobivanellus miles personatus* in being larger and much darker above: wing 236 mm., culmen 32, tarsus 76.

Adult female. Similar to the adult male.

Nest. A depression in the ground.

Eggs. "Clutch four. Ground colour greenish-olive, spotted with dark-brown and dull slate. Axis 43-44 mm; diameter 32-33." (White.)

Breeding-season. April (Berney).

MR. F. BERNEY,* of the Richmond District of North Queensland, writes: "Another occasional visitor, as likely to be seen one month as another. I think it is rare for them to nest here, as they seldom remain long enough to give themselves time, but I am glad to be able to report their having done so this year. On the 10th April, while driving a mob of four or five thousand sheep along the margin of a swamp, I disturbed half a dozen pairs of these Plovers, all of which I am certain were nesting. I found four nests, three containing four eggs each and one with a single egg.

"As the host of sheep advanced the birds came out to meet it, uttering their loud cry; gradually falling back, they took up their stand facing the foe, right on the edge of their nests. One step backwards would have put them on the eggs. Extending their wings, they displayed the full expanse of their white front, and clamorously—very clamorously—defied all and sundry to come on. Even when I went up to personally investigate they declined to do anything more than retire a few yards at a dignified walk, loudly

* *Emu*, Vol. VI., p. 111, 1907.

THE BIRDS OF AUSTRALIA.

complaining all the time. However, they had no cause for complaint—I did not rob them. In each instance the eggs rested on the bare ground within a depression, with a considerable quantity of nesting material—dry stacks of grass and herbage—collected round them, arranged apparently by the sitting bird gathering all within reach of her while on the nest. These nests were some hundreds of yards apart from each other, and in no way formed a colony. I do not think I ever saw more than two of these birds together.”

The type-bird described is a male, collected by the late William Stalker at Inkerman, North Queensland, on November 18th, 1907.

GENUS—Z O N I F E R .

ZONIFER Sharpe, Cat. Birds Brit. Mus., Vol. XXIV.,
pp. 145, 154, 1896.. .. Type *Z. tricolor*.

Sarciophorus Reichenbach, Nat. Syst. Vögel, p. xviii.,
1852 (not of Strickland, 1841) Type *Z. tricolor*.

LARGE Lapwings with short bills, long wings, no spurs, small facial wattle,
short legs and small feet.

The bill is short (comparatively) and stouter than in the preceding genus ;
in front of the eye is a small oval flesh lappet but no pendant wattle. Wings
long, with the first three primaries subequal ; only a blunt knob on the bend
of the wing.

Metatarsus short and apparently irregularly scutellated on the back,
though regularly scaled in front. Toes short, and no hind toe.

Key to the Species.

- A.* Black band on breast very broad *Z. t. tricolor*, p. 59.
B. Black band on breast narrower *Z. t. gwendolencæ*, p. 65.

ZONIFER TRICOLOR TRICOLOR.

BLACK-BREASTED PLOVER.

CHARADRIUS TRICOLOR Vieillot, Nouv. Dict. d'Hist. Nat., Vol. XXVII., p. 147, 1818; New South Wales.

Charadrius tricolor Vieillot, Nouv. Dict. d'Hist. Nat., Vol. XXVII., p. 147, 1818.

Charadrius pectoralis Wagler, Syst. Av., Charad., p. 58, sp. 8, 1827.

Sarciophorus tricolor Strickland, Proc. Zool. Soc. (Lond.) 1841, p. 33.

Sarciophorus pectoralis Gould, Birds Austr., Vol. VI., pl. 11, 1842; Sturt, Jour. Exp. Centr. Austr., Vol. II., App., p. 48, 1849; Gould, Handb. Birds Austr., Vol. II., p. 222, 1865; Ramsay, Ibis 1867, p. 420, pl. ix., fig. 3; Harting, Proc. Zool. Soc. (Lond.) 1874, p. 458; Ramsay, *ib.* 1877, p. 336; *id.*, Proc. Linn. Soc. N.S.W., Vol. I., p. 187, 1877; *id.*, *ib.*, Vol. II., p. 197, 1878; *id.*, Tab. List Austr. Birds, p. 19, 1888; North, Austr. Mus. Cat., No. 12, p. 302, 1889; Cox and Hamilton, Proc. Linn. Soc. N.S.W., 2nd ser., Vol. IV., p. 419, 1889; Legge, Austr. Assoc. Adv. Sci., Vol. IV., p. 978, 1892; Campbell, *ib.*, Vol. V., p. 430, 1893; North, Agric. Gaz. N.S.W., Vol. XVI., p. 1015, 1905.

Hoplopterus tricolor Gray, Genera Birds, Vol. III., p. 542, 1847.

Charadrius vanelloides Peale, U.S. Expl. Exp., p. 240, 1848 (*cf.* 2nd ed., p. 328, 1858).

Lobivanellus pectoralis Schlegel, Mus. Pays-Bas, Vol. IV., Cursores, p. 65, 1865; Seebohm, Geogr. Distr. Charadr., p. 200, 1887.

Hoplopterus pectoralis Gray, Handl. Gen. Spec. Birds, Vol. III., p. 13, 1871.

Chettusia (*Lobivanellus*) *pectoralis* Finsch, Proc. Acad. Nat. Sci. Philad. 1872, p. 32. \\

Zonifer tricolor Sharpe, Cat. Birds Brit. Mus., Vol. XXIV., p. 154, 1896; Campbell, Nests and Eggs Austr. Birds, p. 784, 1901; Hall, Key Birds Austr., p. 81, 1906; Berney, Emu, Vol. VI., p. 112, 1907; Austin, *ib.*, Vol. VII., p. 77, 1907; Mathews, Handl. Birds Austral., p. 24, 1908; Littler, Handb. Birds Tasm., p. 125, 1910.

Zonifer tricolor tricolor Mathews, Nov. Zool., Vol. XVIII., p. 216, 1912.

DISTRIBUTION. Queensland, New South Wales, Victoria, Tasmania, South Australia.

Adult male. Differs from *Z. t. gwendolenæ* in having the black band on the breast wider, and the wattle before the eye much smaller, and lighter in coloration.

Adult female. Similar to the adult male.

Nest. A depression in the ground, lined with dead sticks, etc.

Eggs. Clutch, four; ground-colour stone, covered all over with spots of reddish-purple and lavender; axis 42-44, diameter 30-31.

THE BIRDS OF AUSTRALIA.

Breeding-season. May, July, and August (Christian—Northern Victoria); June to September (Sandland—South Australia); August (Cox and Hamilton); September to January (Ramsay).

Incubation. Twenty-eight days (Campbell).

CAPTAIN S. A. WHITE, of South Australia, says: "These sprightly little birds are dispersed over the whole of Eastern Australia. I have met with them on the vast plains of the interior as well as on the sea shore; they are birds of a very sprightly and active nature and carry themselves in an elegant manner when travelling rapidly over the ground, their broad pectoral band showing up in great contrast to the white belly. They lay four eggs in a depression in the ground, without a nest, and their shape is identical with those of *Lobibyx novæ-hollandiæ*—in fact only for the eggs being somewhat smaller would they often be taken for those of the larger bird. They have a great habit of pretending injury and will draw your attention away from eggs or young by giving forth frantic shrieks followed by an imitation of a wounded bird, and will flutter and flap about, gradually drawing you away from their nest. I cannot help mentioning a very close resemblance in form, call and habits of this bird to a member of the genus *Stephanibyx* (*melanopterus*) which I had the pleasure of observing in Africa. The wonderful resemblance of the latter bird to the Australian species often made me wonder if I were in a trance when wandering over the African veldt. Breeds early in August and for most of the year congregates in small flocks of two or three up to 30 or 40."

Mr. Sandland, of South Australia, says they are "Very numerous. Nests from June to September. Places nest anywhere; eggs always four, lying with points always towards one another."

Mr. J. W. Mellor, also of South Australia, observes: "These birds are lovers of the open, low grassy plains of the inland country of all the states, and are to be seen in the cultivated wheat fields, where they do much good by eating up injurious insects, etc. They often go in small flocks in search of their food, taking flight at the approach of their enemies, as they are very timid. They make long flights across country, and are sometimes seen flying very high in the air, uttering their well-known clunking note, which can be distinguished immediately from the note of the Spur-wing species. They are very fond of the common black cricket which does so much damage to grass and feed for stock generally; they are, therefore, the friends of the settlers. The eggs are four in number, and can be easily detected from the eggs of the Spur-wing by being smaller, and having a lighter brown ground colour, and the dark spots being more round and regular, and sprinkled over the shell more evenly. The nest is a slight hollow in the ground, but the eggs

BLACK-BREASTED PLOVER.

are very often laid on the level earth, the spotting acting as a protective coloration, and harmonizing with the surroundings. I have seen the birds in many localities."

Mr. E. J. Christian, of Northern Victoria, sends me the following: "Up here this bird is seen sometimes out in the middle of a plain where water is nowhere to be seen. They are extremely tame, and although splendid eating they are never shot. They are very active and when running generally keep up a curious note. I fear at the time of the year when foxes begin to come about, many of these graceful birds are destroyed; they never seem to take any notice at all of dogs, unless nesting. When we are riding or driving they will just walk, or rather 'quick march' out of our way. They look very martial, as they stand quite upright when they walk. In winter before nesting starts they assemble here in large flocks. When assembled like this they are very often accompanied by *Gallinago australis*. I have seen flocks of plover here numbering 200 birds. I have often ridden amongst them and then stood still in the centre of them. Bird after bird gets up and retires to a distance of, say, 200 to 300 yards; then one after another they fly straight at you calling out the whole time. The cry sounds like 'Too-too-too-too' slowly, then the same repeated quickly and getting higher up the scale as they approach your head. They come in a dead line for the top of your head, and when just above your horse's ears they screech and fly straight up into the air; they repeat the same again and again till you move away.

"They begin to nest here in early August or, sometimes, if the winter is very mild, in early July. When nesting they will do all in their power to keep you away from the nest. They are rather stupid in that respect for often you would not suspect that a nest was near but for them. Many a nest is discovered just by the fact that they practically show it. When approaching a nest the birds fly at you in the manner described, and if that fails they will alight on the ground and walk away slowly, hoping you will follow. If, coming on the bird on the nest all of a sudden (which is a very hard thing to do) she will run off and extend one wing on to the ground and when followed, will flutter along for a couple of yards and then stop. She does not go in a straight line, and when satisfied that she has got you far enough, she gets up and flies away.

"When sheep come along, perhaps being driven, the drover will sometimes wonder why the sheep stop and then split into two flocks and go off in different directions. If the drover is a keen observer he will soon know what is the matter. The sheep have come up to a plover's nest, and the bird, instead of jumping up and flying off does a very simple thing, it extends one

THE BIRDS OF AUSTRALIA.

wing on to the ground and the stiff feathers make a rustling noise. The sheep stop dead and perhaps either all run round one way or split into two flocks, leaving a clear space in which the bird and nest are quite safe. It is very comical indeed to watch such a proceeding. The young are also, by many devices, able to preserve themselves from danger; in dry years when the plains are bare and dry the young bird would have very little chance of living if it were not for its cunning. One afternoon as I was riding along, I could see some of this species in the distance. Riding towards them they ran away from the spot as quickly as they could, and I saw something move in an opposite direction for a fraction of a second, then fall forward as if one stood a stick on end and let it drop; keeping my eyes on that spot, I rode straight to it, and after looking carefully about I found a fluffy young plover. The parent birds came back alone and stood five or six yards away, and kept up a peculiar note the whole time I held the chick. I put it down, mounted and rode away, and looking back saw all three making off to what, they hoped, would be safer ground.

"March and April, 1908, were so dry that for the first time, to my knowledge, these birds left the district. They returned on 21st April, or ten days before the rain came (1st May).

"These birds are very often heard at night. As I write two or three are calling on the other side of the creek. In very hot weather, when the sun registers over 100 degrees, the plover on the plains seeks the shade of posts of the fences, and for miles one can drive and at every post see a plover in the scanty shade.

"They make no nest, but the eggs are placed in a slight depression. I have generally found three eggs to a clutch.

"I have frequently seen them drive Kestrels (*Cerchneis cenchroides*) away from their nests. I caught several young ones with speckled head, on the 22nd of Oct., 1908. On May 9th, 1909, I found a nest of four eggs and next day noticed another pair whose actions on my approach showed me plainly that they were nesting."

Mr. Charles Belcher, also of Victoria, writes: "This bird is variously known as Lapwing, Plain Plover, and Little Plover. It is probably more numerous than the Spur-wing in Victoria, but also more local in its distribution, for whereas you may be sure of finding the Spur-wing almost anywhere, the Black-breasted Plover keeps as a rule to wide open plains and rolling downs country, nor has it any partiality for swamps. I have seen large flocks on each side of the divide, particularly near Kyaham and Coleraine. These are formed at the end of the breeding season, which is at its height in August,

BLACK-BREASTED PLOVER.

and the birds split up into pairs again about the following June. Four eggs are laid, in a slight hollow in the ground with little or no lining. In all its habits the Black-breasted Plover most closely resembles the Lapwing of Europe, and save for the difference in the cry might easily be mistaken for that bird at a little distance. A Black-breasted Plover will sit on her eggs when a flock of sheep is being driven in that direction till half the flock has passed over her and then sometimes rise from her nest."

Miss Fletcher, of Tasmania, sent me this note: "The stronghold of these birds in the Midlands is about 27 miles south of Cleveland at Tunbridge. There was a large flock, however, whose head-quarters were midway between Cleveland and the South Esk River. They occasionally spent a day or two around the Cleveland Lagoon and the sheep paddocks near by. I have found a clutch of four young ones and was present at the finding of a nest of four eggs by another naturalist, who gave the clutch to me. This nest was in a hollow scratched out beside a heap of horse manure, and I was told by the finder that when hunting for eggs of this bird to always search such positions first as the birds were very partial to forming their nests by this manure. The nest of this species is much easier to find than that of the Spur-wing (*Lobibyx*). When taking the eggs the birds keep close to the spot and make such a noise generally, thus attracting many pairs which add their cries to the general din. When their young or eggs are in danger the parents will come almost to within touching distance. I append a few dates of finding eggs, etc. :—

"23/ 9/08. Four eggs, parent sitting.	15/ 8/10. Young.
27/10/08. Young ones.	18/ 8/10. Four eggs just chipping.
6/10/09. Young ones in down.	16/10/10. Four fresh eggs.
17/ 7/10. Parent sitting.	

"I met with this species only on one occasion, about fifty miles inland, while enjoying the hospitality of Mr. Stone, Superintendent of 'The Vale of the Herbert' station, the property of Walter Scott, Esq. [North Queensland]. In the extensive and well-grassed paddocks around the station a flock of these birds had taken up their abode. Mr. Stone informed me that they remain in the neighbourhood throughout the whole year; and being seldom if ever molested, they showed no symptoms of fear, quietly remaining while I walked within a few feet of them."*

"An irregular visitor [to the Richmond District, North Queensland], generally in small parties, but I have seen as many as two or three hundred together. The cry of this Plover is very similar to that of the preceding species, but I think *Z. tricolor* has a harsher and slightly higher pitched note,

* Ramsay, *Proc. Zool. Soc.* (Lond.) 1877, p. 336.

THE BIRDS OF AUSTRALIA.

while that of *L. miles* is fuller and more musical, but it required a bit of study to distinguish between the two.”*

“These birds live in large flocks up till the middle of July, when they separate into pairs. They are very regular in their time of nesting [in the Mudgee district]; eggs from about the 1st to 14th August. They pack again on November 19th.”†

“Shooting begins 1st February, ends 30th June [in Tasmania]. The Black-breasted Plover is more familiar to most people than the species previously discussed [*Lobibyx novæ-hollandiæ*], as it is the one more frequently exposed for sale during the open season, and also it resorts to cultivated land in the vicinity of homesteads. Whereas the Spur-winged Plover is hardly ever found away from more or less marshy ground, the species now under review frequents grass lands and cultivated fields impartially. In some districts at certain times of the year it is rather common, moving in fairly large flocks.

“It moves over the ground very fast. When feeding it will run a short distance, stop, then hurry on a little further.”‡

Again, as the species is confined to Australia there is little trouble in connection with its nomination. Described as *Charadrius tricolor* by Vieillot in 1818, this name was ignored in favour of the later *C. pectoralis* of Wagler, of 1827, though the former name was generally quoted in the synonymy, until Sharpe, in the *Cat. Birds Brit. Mus.*, Vol. XXIV., 1896, restored to its right place Vieillot's name. At the same time Sharpe noted that the genus-name *Sarciophorus* did not rightly belong to this species and therefore introduced the generic name *Zonifer* for it alone.

Thus, at one move, *Sarciophorus pectoralis* became *Zonifer tricolor*, and as a striking example of the ease with which the most distressing innovations can be utilised, since 1896 no writer has offered to revert to the older name, and *Zonifer tricolor* is now as familiar as ever the previous name was.

Its only synonym, other than the one noted, is *Charadrius vanelloides* of Peale.

*Berney, *Emu*, Vol. VI., p. 112, 1907.

†Cox and Hamilton, *Proc. Linn. Soc. N.S.W.*, 2nd ser., Vol. IV., p. 419, 1889.

‡Littler, *Handb. Birds Tasm.*, p. 126, 1910.



J G Keulemans, del

Witherby & Co

$\frac{2}{3}$

ZONIFER TRICOLOR.
(BLACK-BREASTED PLOVER).

ZONIFER TRICOLOR GWENDOLENÆ.

WESTERN BLACK-BREASTED PLOVER.

(PLATE 131.)*

ZONIFER TRICOLOR GWENDOLENÆ Mathews, Nov. Zool., Vol. XVIII., p. 216, 1912; West Australia.

Zonifer tricolor Ogilvie-Grant, Ibis 1910, p. 182; Carter, *ib.*, p. 657.

Zonifer tricolor gwendolenæ Mathews, Nov. Zool., Vol. XVIII., p. 216, 1912.

DISTRIBUTION. South-west Australia.

Adult male. General colour above purplish-bronze somewhat paler on the hind-neck; darker and inclining to blackish on the lower-back; lesser wing-coverts rather darker than the back; the small coverts on the outer edge of the wing dark brown edged with white; median-coverts tipped with white; the greater series almost entirely white; tail white, with a broad black band at the tip, the outer feathers fringed with white at the ends; crown of head, cheeks, sides of neck, and breast black, the latter with a purplish gloss; in front of the eye an oval-shaped red wattle; a line behind the eye, throat, and fore-neck white, like the abdomen, under tail-coverts, axillaries, and under wing-coverts; bill, iris, and eyelid canary-yellow; knees and tibia dark crimson; tarsi and feet black; soles of feet dark greyish flesh-colour; wattle bright red. Total length 284 mm.; culmen 22, wing 194, tail 83, tarsus 49.

Adult female. Similar to the adult male.

Immature. Has the marginal wing-coverts above edged with rufous.

Young, in nestling-plumage (partial down). Rufous-brown on the upper-parts with indistinct barrings of sandy-buff; forehead, sides of crown, and nape covered with black-and-buff down; a narrow white line under the eye, continued over ear-coverts and around the hind-neck; ear-coverts pale brown; throat, abdomen, and sides of body white; tail, composed of down, blackish, tipped with white.

MR. TOM CARTER, who collected the type of this bird, says: "I have not seen this species further north than about the latitude of Perth. It occurs not uncommonly on cultivated and open grass lands from 50 miles east of that town as far south at least as Broome Hill, in which locality it has largely increased since my arrival there in 1905, no doubt owing to fresh areas being cleared and cropped every year. They may be seen almost all the year round, but are emigrating to a certain extent. About November, when the young

* The Plate is lettered *Zonifer tricolor*.

THE BIRDS OF AUSTRALIA.

birds are on the wing, they gather in flocks, preparatory to the bulk of the birds migrating. In November, 1910, I saw a flock of well over one hundred birds feeding round a stock tank here for several days. September 15/1910, saw young in down, about a fortnight old. October 23/1910, saw young in down only a few days old."

The bird figured and described is the type, and was collected at Broome Hill, South-west Australia, on May 30th, 1908. It is named in honour of Miss Gwendolene Carter, daughter of Mr. Tom Carter.

GENUS—S Q U A T A R O L A .

SQUATAROLA Cuvier, Règne Anim., Vol. I., p. 467,

1816 Type *S. squatarola*.

Also spelt—

Squaterola Kaup, Skizz Entwick-Gesch. Nat. Syst., p. 155, 1829.

Sqatarola Gray, Genera Birds, Vol. III., pl. 145, 1847.

Squatarolla Fritsch, Naturg. Vögel Europa's, p. 323, 1870.

LARGE Plovers with stout bills, long wings, short legs and strong feet.

The bill is straight and stout, the dertrum much swollen and rounded, as long as the head; the nostrils linear and placed in a groove. The wings are long, and the first primary is longest. Tail rounded. Metatarsus short and covered both in front and behind with hexagonal scales. Outer and middle toes connected by a short web at the base. Minute hind-toe and claw present.

The Pluvialine Waders have offered more trouble to the systematist than the Vanelline forms, as no ornamental spurs, wattles, or crests are found among them.

The present species is the sole member of a genus consistently recognised as valid on account of the presence of a minute hind-toe and claw. Two other species apparently very closely allied by reason of size and coloration, have been dissociated from it, and by some workers lumped with a number of small, differently-coloured forms. A casual glance at such an assemblage points to the fallacious recognition of such structural features as a minute hind-toe being of more value than colour, and it seems certain that in this group colour must be taken into consideration when generic values are discussed.

To me the Pluvialine forms comprised in the genera *Squatarola* and *Pluvialis*, as I use them, stand apart from the other smaller forms classed in the *Catalogue* of the Birds in the British Museum under *Ægialitis*, *Ochthodromus*, *Eudromias*, etc.

It is significant that when Seebohm included the majority of the Plovers under the single genus *Charadrius*, he admitted three subgeneric groups, viz. :—

Pluviales : or typical Plovers and Dotterels.

Hiaticulæ : Ringed Plovers.

Ægialophili : Sand-Plovers.

THE BIRDS OF AUSTRALIA.

The nomenclature used is interesting; while in his subgenus *Pluvialis* he included:—

<i>C. virginicus</i>	<i>Charadrius</i> (Cat. Birds Brit. Mus.).
<i>morinellus</i>	<i>Eudromias</i> .
<i>fulvus</i>	<i>Charadrius</i> .
<i>pluvialis</i>	<i>Charadrius</i> .
<i>helveticus</i>	<i>Squatarola</i> .
<i>veredus</i>	<i>Ochthodromus</i> .
<i>australis</i>	<i>Peltohyas</i> .
<i>rufiventris</i>	<i>Erythrogonys</i> .
<i>totanirostris</i>	<i>Oreophilus</i> .
<i>modestus</i>	<i>Zonibyx</i> .
<i>sociabilis</i>	<i>Pluvianellus</i> .

It is noteworthy that in this grouping the hind toe is ignored, but recent lumping has not taken this course. In my "Reference List" I lumped all the Plovers and Dotterels in *Charadrius* and recognised *Squatarola*, and in the recent *Hand-List of British Birds* the same course has been followed, *Squatarola* being preserved for *S. squatarola* while *Charadrius* is utilised for *morinellus*, *asiaticus*, *hiaticula*, *dubius*, *alexandrinus*, *vociferus*, *apricarius*, and *dominicus*. In the same place *Chettusia* and *Vanellus* are both recognised, though the main difference between these two seems to consist in the crest of the latter. I consider that *C. apricarius* and *dominicus* are much nearer to *S. squatarola* than they are to any of the species grouped with them in the above method.

In the A.O.U. *Checklist*, 3rd. ed., 1910, the following system is adopted:—

<i>Eudromias</i>	<i>E. morinellus</i> .
<i>Squatarola</i>	<i>S. squatarola</i> .
<i>Charadrius</i>	<i>C. apricarius</i> and <i>dominicus</i> .
<i>Oxyechus</i>	<i>O. vociferus</i> .
<i>Ægialitis</i>	<i>Æ. semipalmata</i> , <i>hiaticula</i> , <i>dubia</i> , <i>meloda</i> , <i>nivosa</i> , and <i>mongola</i> .
<i>Ochthodromus</i>	<i>O. wilsonius</i> .
<i>Podasocys</i>	<i>P. montanus</i> .

Inasmuch as the acceptance of *Squatarola* as distinct seems to have been questioned only by Seebohm, the discussion of the further groupings will be more in order later, under the respective forms admitted.



Witherby & Co.

$\frac{2}{3}$
SQUATAROLA SQUATAROLA.
(GREY PLOVER).

W. & A. G. S.

SQUATAROLA SQUATAROLA HYPOMELUS.

EASTERN GREY PLOVER.

(PLATE 132.)*

CHARADRIUS HYPOMELUS Pallas, Reise Russ. Reichs., Vol. III., p. 699, 1776 ; Siberia (East).

Charadrius hypomelus Pallas, Reise Russ. Reichs., Vol. III., p. 699, 1776.

Vanellus melanogaster (not Bechstein) Horsfield, Trans. Linn. Soc. (Lond.), Vol. XIII., p. 186, 1821 (Java).

Charadrius hypomelanus Pallas, Zoogr. Rosso-Asiat., Vol. II., p. 138, 1827 (Siberia).

Charadrius pardala id., ib., p. 142.

Squatarola helvetica Gould, Birds Austr., Vol. VI., pl. 12, 1848 ; Schrenck, Vögel des Amur-Landes, p. 409, 1860 ; Newton, Proc. Zool. Soc. (Lond.) 1861, p. 398 ; Radde, Reisen Suden von Ost-Sibir., p. 322, 1863 ; Gould, Handb. Birds Austr., Vol. II., p. 224, 1865 ; Swinhoe, Ibis 1870, p. 360 ; Ramsay, Proc. Linn. Soc. N.S.W., Vol. III., p. 297, 1878 ; Salvadori, Ornith. Papua e Mol., Vol. III., p. 293, 1882 ; Kelham, Ibis 1882, p. 7 ; Legge, Austr. Assoc. Adv. Sci. 1892, p. 965 ; Taczanowski, Mem. l'Acad. Imper. Sci. St. Petersb., ser. 7, Vol. XXXIX., p. 835, 1893 ; Sharpe, Cat. Birds Brit. Mus., Vol. XXIV., p. 182, 1896 (pars) ; Hall, Key Birds Austr., p. 81, 1899 ; Campbell, Nests and Eggs Austr. Birds, p. 786, 1901 ; Carter, Emu, Vol. III., p. 175, 1904 ; Hall, Key Birds Austr., p. 81, 1906 ; Mathews, Handl. Birds Austral., p. 24, 1908 ; Littler, Handb. Birds Tasm., p. 127, 1910.

Charadrius (Squatarola) squatarola Middendorff, Sibirische Reise, Vol. II., p. (290 *sic*) 209, pl. XIX., 1851.

Squatarola helvetica australis Reichenbach, Novit. Syn. Av., No. V., 175, CCCXL.; Nos. 2683-84, 1851 (Australia).

Squatarola australis Bonaparte, Comptes Rendus Sci. (Paris), Vol. XLIII., p. 416, 1856.

Charadrius (Squatarola) helvetica Ramsay, Proc. Linn. Soc. N.S.W., Vol. I., p. 157, 1876 ; *id., ib.*, Vol. II., p. 197, 1878 ; *id.*, Tab. List. Austr. Birds, p. 19, 1888.

Charadrius squatarola Stejneger, Proc. U.S. Nat. Mus., Vol. X., p. 126, 1887 ; *id.*, Bull. U.S. Nat. Mus., No. 29, p. 103, 1888.

* The Plate is lettered *Squatarola squatarola*.

THE BIRDS OF AUSTRALIA.

Charadrius helveticus Seebohm, Ibis 1888, p. 347.

Squatarola squatarola Mathews, Nov. Zool., Vol. XVIII., p. 216, 1912.

DISTRIBUTION. Siberia (breeding), southwards to Australia and Tasmania.

Adult male, in summer-plumage. Upper surface variegated with black, brown, and white; forehead and a line over the eye which is continued on to the sides of the breast white like the under wing-coverts, thighs, and under tail-coverts; sides of face, throat, middle of breast and abdomen black like the axillaries; primary-coverts black edged with white at the tips; the four outer primaries black with white shafts and white on the inner web at the base; the fifth has a white longitudinal line adjoining the shaft on the outer web towards the tip which is increased on the sixth, on the seventh it crosses the outer web, the outer web of the eighth primary is almost absorbed with white, and the ninth likewise; secondaries pale brown with white bases and fringed with white; bill black, base of lower mandible purplish-black; iris dark brown; feet greyish-black. Total length 290 mm.; culmen 31; wing 195, tail 76, tarsus 50.

Adult female. Very similar to the adult male.

Adult, in winter-plumage. Differs from the adult in breeding-plumage in being more uniform above, the feathers dark brown, with black shaft-lines and edged with white; sides of crown, sides of face, and ear-coverts streaked with brown and white; a dark spot in front of each eye; throat, abdomen, and under tail-coverts white, the latter with spots of brown on the outer webs; primary-quills black with white shafts, the sixth, seventh, and eighth showing an indication of a white line on the outer web next to the shaft.

An adult male, immediately after breeding, has commenced to cast off the nuptial-plumage, which is only retained for a short period, and has become more brown on the upper-surface, the white and black markings being everywhere worn off; the upper tail-coverts are almost white instead of being regularly barred; sides of face, throat, breast, abdomen, and sides of body chequered with white; sides of crown white, but the line leading to the sides of the breast scarcely defined.

Immature, of the first year. Upper-surface mottled with brown and white which is produced by the feathers being brown-notched on the sides and tipped with white, these markings more minute on the top of the head and hind-neck; sides of crown, ear-coverts and sides of face streaked with pale brown and white, paler and more coarsely marked on the breast; axillaries black; primary- and secondary-quills much the same as in the adult; a short white line immediately below the eye; breast and sides of body mottled with pale brown and white showing obsolete bars on the flanks; throat and middle of abdomen white like the under tail-coverts.

Young. Dark brown above, the feathers spotted and notched with dull white or buff on the margins; upper tail-coverts white, some of them tinged with buff and barred with brown; tail brown, barred with white, the brown becoming merged at the ends with marginal spots of buff; crown of head like the back but the pattern much smaller; forehead, sides of face, fore-neck, and breast minutely marked with longitudinal brown streaks; throat, abdomen, under tail-coverts, and under wing-coverts for the most part white.

The young of this species can always be distinguished by its black or blackish axillaries from the Golden Plover (*Pluvialis apricarius*) which have white axillaries, and from the Asiatic Golden Plover (*Pluvialis dominicus fulvus*)—which have the axillaries dusky-brown—by being smaller.

Nestling. Upper-parts mixed with black, or dark brown and buff, with a white nuchal collar; under-surface silky-white.

Nest. "A depression in the earth lined with dry leaves and lichen" (Middendorff).

EASTERN GREY PLOVER.

Eggs. "Ground colour yellowish-grey to brownish-yellow, covered with dark brown spots. Axis 48 to 56 mm.; diameter 36 in." (Middendorff.)

Breeding-season. June and July (Middendorff).

MR. J. P. ROGERS, writing from Derby, North-west Australia, says: "These are the wariest birds here and are very hard to kill. At times they are seen in small flocks of from ten to twelve, but more often in ones or twos. Sometimes they are alone, at others in company with *O. geoffroyi* and *Pisobia ruficollis*.

"When I came here in December of 1910, these birds were not numerous, often a single bird would be seen with *O. geoffroyi* or some other wader and sometimes alone. They were very wild and were seldom seen away from the shore. At high tide they used to go into the bare ground outside the mangroves, but I never saw them feeding on the grassy flats like the Golden Plover."

At Point Torment, north of Derby, he found them "on the 22nd February, 1911, seen in small flocks up to a dozen in number but very wild. From the 7th to 27th March—many single birds, and small flocks seen. From the 28th March to the 10th April they were less plentiful, and from the 12th to the 31st April only a few odd ones were noticed."

The same naturalist, from Melville Island, Northern Territory, reports that these birds were there from November 5th, 1911, to February, 1912.

Mr. Tom Carter sends me the following: "A regular summer visitor about the North-west Cape, arriving about the 21st of September. They are very wary birds and usually feed close to the edge of the sea in pairs or singly. I found it common at Albany, South-west Australia, in March."

Middendorff, who was the first man to find this bird breeding, gives a detailed account of it and its eggs, and also figures one of the latter (*Sibirische Reise*, Vol. II., p. 290 (=209), 1851. He says that "it breeds in the Byrranga Mountains (74° N.) and on the Boganida River (71° N.), but not as commonly as the Golden Plover. Before the 25th of May no birds were seen on the Boganida. On the 26th of June the female was sitting on four eggs, on her nest which was a depression in the earth, lined with dry leaves and lichen.

"In their shape the eggs of *Char. squatarola* correspond with those of *Van. cristatus* and *Char. morinellus*, but are larger. The average size being 54 mm. long by 36 wide. The largest were 56 mm. long and the smallest 48.

"The colouring offers no distinctive characteristics. The ground colour is yellowish-grey to brownish-yellow covered with dark brown spots.

"The females which I saw had, in full summer plumage, an irregular white stripe, which stretched along the median line over the black of the breast and belly, which distinguished them from the males.

THE BIRDS OF AUSTRALIA.

"A female, apparently a young one, shot on the 20th June, was flecked all over the breast and belly with black and white, evenly distributed, while the remaining females were in full summer plumage at that time."

Schrenck (*Vögel des Amur-Landes*, p. 409, 1860) says: "Near the Post Office at Nikolajewschan I shot a solitary specimen in the Autumn of 1854. It was in full winter plumage on the 28th September."

Radde (*Reisen Süden von Ost-Sibir.*, p. 322, 1863) reports that two specimens were in the vicinity of Onon, near the old fortress of Tschindantsk, on September 22nd, 1856.

Stejneger (*Proc. U.S. Nat. Mus.*, Vol. X., p. 126, 1887) says it visits the Commander Islands on the fall migration. "One specimen was collected on the 8th of October, 1884, on Bering Island." And again (*Bull. U.S. Nat. Mus.*, No. 29, p. 104, 1885): "The Gray Plover was only observed on Bering Island during the fall migration, at which time they seem to arrive regularly. Several flocks were met after the middle of September. I saw a single bird still on the 28th of October in a flock of *Charadrius fulvus*."

The bird figured in winter-plumage was collected at Point Torment, North-west Australia, on February 22nd, 1911, by Mr. J. P. Rogers.

The species *S. squatarola* breeds all round the Arctic Circle and migrates southward. On this account no long series of breeding-birds are yet available, and consequently subspecific forms are difficult to diagnose. On the principle I have followed with the Turnstone, I am using the name given to an Eastern bird in preference to that bestowed on the Western one.

My own studies lead me to consider that the Eastern form is slightly larger throughout; the bill, wing, and tarsus all showing slightly larger measurements. In addition, the bill is generally deeper. In the winter-plumage the Eastern form seems to be greyer, not so brown as in the Western bird, but the Eastern birds seem to be freshly moulted, while the Western birds are in somewhat worn plumage though killed in the same month.

Alaskan-killed birds in full breeding-plumage appear to be generally of lighter coloration above than West European.

GENUS—P L U V I A L I S.

PLUVIALIS Schaeffer, Museum Ornith., p. 45, 1789 Type *P. apricarius*.
(*Charadrius* of most authors.)

STRUCTURALLY like *Squatarola*, but with the hind toe and claw missing. The bill is not quite so stout, and one of the species is less strongly built, but still considerably larger than the Ring- and Sand-Plovers.

The close connection between this and the preceding genus is easily traced by their general coloration, notwithstanding the absence of the hind toe. In *Squatarola* the summer-plumage is mottled black-and-white above with the under-surface black: in the present genus the summer-plumage is mottled black-and-golden above with the under-surface black; but in the former genus the immature has the upper-surface showing a mottled black-and-golden-appearance. No other Plovers, save the three included in the two genera *Squatarola* and *Pluvialis*, have the upper-surface mottled, nor have they uniform black under-surfaces.

PLUVIALIS DOMINICUS FULVUS.

EASTERN GOLDEN PLOVER.

(PLATE 133.)*

CHARADRIUS FULVUS Gmelin, Syst. Nat., p. 687, 1789; Tahiti.

Charadrius fulvus Gmelin, Syst. Nat., p. 687, 1789; Finsch und Hartlaub, Fauna Centra-Polyn., p. 188, 1867; Dresser, Birds Europe, Vol. VII., p. 443, 1871; Buller, Birds New Zealand, p. 212, 1873; Layard, Proc. Zool. Soc. (Lond.) 1875, p. 440; *id.*, Ibis 1878, p. 262; *id.*, *ib.* 1879, p. 107; Seebohm, *ib.*, p. 153; Layard, *ib.* 1881, p. 135; Kelham, *ib.* 1882, p. 8; Layard, *ib.*, p. 532; Cheeseman, Trans. New Zeal. Inst. 1881, Vol. XIV., p. 264, 1882; Salvadori, Papua e Mol., Vol. III., p. 294, 1882; Kirk, Trans. New Zeal. Inst. 1884, Vol. XVII., p. 59, 1885; Seebohm, Geogr. Distr. Charadr., p. 99, 1887; Ramsay, Tabl. List Austr. Birds, p. 19, 1888; Buller, Birds New Zeal., 2nd ed., Vol. II., p. 6, 1888; La Touche, Ibis 1892, p. 496; Legge, Proc. Austr. Assoc. Adv. Sci., p. 967, 1892; Rothschild, Av. Laysan, p. 11, 1893; Carter, Emu, Vol. III., p. 175, 1904.

Charadrius fuscus† Latham, Index Ornith., Suppl., p. lxvi., 1801 (New South Wales).

Charadrius griseus id., *ib.*, p. lxvii. (New South Wales); Lesson, Manuel d'Orn., Vol. II., p. 321, 1828; Sharpe, Hist. Coll. Brit. Mus., Vol. II., Birds, p. 147, 1906.

Charadrius pluvialis (not Linné) Horsfield, Trans. Linn. Soc., Vol. XIII., p. 187, 1820; Pallas, Zoogr. Rosso-Asiat., Vol. II., p. 141, 1826; Middendorff, Sibirische Reise, Vol. II., p. 210, 1851; Schrenck, Vögel des Amur-Landes, p. 410, 1860; Radde, Reisen Suden von Ost-Sibir., p. 322, 1863; Pelzeln, Reiss Nov., Vögel, p. 115, 1865.

Charadrius xanthocheilus Wagler, Syst. Av., Charadr., p. 68, 1827 (I designate Australia as type-locality); Jardine and Selby, Illustr. Ornith., Vol. II., pl. lxxxv., 1830; Gray, in Dieffenbach's Travels in New Zeal., Vol. II., App., p. 195, 1843; Gould, Birds Austr., Vol. VI., pl. 13, 1848.

Charadrius taitensis Lesson, Manuel d'Orn., Vol. II., p. 321, 1828 (Tahiti).

Charadrius glaucopus Wagler, Isis 1829, p. 649 (Tahiti).

Charadrius virginus Gray, Cat. Mamm. Birds Nepal pres. Hodgson B.M., p. 132, 1846.

* The Plate is lettered *Charadrius fulvus*.

† Sharpe, *Hist. Coll. Brit. Mus.*, Aves, p. 148, identified this as *Limonites ruficollis* ! !



J G Keulemans, del

Witherby & Co.

$\frac{2}{3}$

CHARADRIUS FULVUS.
(LESSER GOLDEN PLOVER).

EASTERN GOLDEN PLOVER.

Charadrius pluvialis orientalis Temminck et Schlegel, Fauna Japonica, p. 104, pl. LXII., 1849 (Japan).

Charadrius virginianus Hartlaub, Arch. fur Nat. 1852, p. 134 (Tahiti).

Charadrius auratus longipes Schlegel, Vögel von Nederl., p. 411, 1854.

Pluvialis fulvus Bonaparte, Comptes Rendus Sci. (Paris), Vol. XLIII., p. 417, 1856.

Pluvialis longipes id., ib.

Pluvialis xanthocheilus id., ib.

? *Pluvialis taitensis* id., ib.

Charadrius mongolicus Blakiston, Ibis 1862, p. 330 (cf. Ibis 1863, p. 100).

Charadrius longipes id., ib., p. 71 ; ? Swinhoe, ib., 1863, p. 404 ; Ramsay, Proc. Linn. Soc. N.S.W., Vol. I., p. 76, 1876 ; id., ib., Vol. II., p. 197, 1878.

Charadrius orientalis Gould, Handb. Birds Austr., Vol. II., p. 225, 1865 ; Masters, Proc. Linn. Soc. N.S.W., Vol. I., p. 60, 1876 ; Barnard, Pap. and Proc. Roy. Soc. Tasm. 1877, p. 19, 1878 (Tasmania).

Charadrius apricarius (not Linné), Rosenberg, Malay Archipel., p. 220, 1878.

Charadrius dominicus fulvus Ridgway, Proc. U.S. Nat. Mus., Vol. III., p. 198, 1880 ; Stejneger, Bull. U.S. Nat. Mus., No. 29, p. 104, 1885 ; id., Proc. U.S. Nat. Mus., Vol. XII., p. 380, 1889 ; Mathews, Nov. Zool., Vol. XVIII., p. 216, 1912.

Charadrius dominicus Sharpe, Cat. Birds Brit. Mus., Vol. XXIV., p. 195, 1896 (pars) ; Hall, Vict. Nat., Vol. XV., p. 100, 1898 ; Hutton, Trans. New Zeal. Inst. 1900, p. 256, 1901 ; Campbell, Nests and Eggs Austr. Birds, p. 788, 1901 ; Legge, Emu, Vol. IV., p. 104, 1905 ; Hall, Key Birds Austr., p. 81, 1906 ; Berney, Emu, Vol. VI., p. 112, 1907 ; Mathews, Handl. Birds Austral., p. 24, 1908 ; Littler, Handb. Birds Tasm., p. 128, 1910 ; Ogilvie-Grant, Ibis 1910, p. 182.

DISTRIBUTION. Siberia (breeding) to Australia, Tasmania, and New Zealand (accidental to Europe).

Adult male, in breeding-plumage. Crown of head, entire back, and scapulars black, thickly spangled with golden-buff, becoming paler and inclining to brown and white on the upper wing-coverts ; greater coverts brown, edged with white ; bastard-wing brown, small coverts on the margin of the wing dark brown tipped with white like the primary-coverts ; primary-quills dark brown, paler on the inner webs, and white on a portion of the shafts towards the tip ; secondaries brown, white at the base, the inner ones edged with white, and the innermost long feathers dark brown notched with golden-buff on each web, and fringed at the side with the same colour ; central tail-feathers barred with dark and pale brown, outer feathers pale brown and white ; forehead and a line over the eye white, which is continued down the sides of the neck and united to a small white patch on the sides of the upper-breast ; lores, a spot in front of each eye, cheeks, throat, middle of breast, and middle of abdomen black ; sides of body variegated with black, white and golden-buff ; axillaries and under wing-coverts pale ash-brown ; under tail-coverts white, the short ones tipped with black, and the long ones barred with black towards the tips ; bill black ; iris dark brown ; feet leaden-grey. Total length 243 mm. ; culmen 22, wing 166, tail 60, tarsus 44.

Adult female, in breeding-plumage. Similar to the adult male. The tarsi of seventeen Eastern birds varies from forty to forty-five millimetres.

THE BIRDS OF AUSTRALIA.

Adult, in winter-plumage. Similar, on the upper-parts, to the adult in breeding-plumage, but differs in the absence of the white on the forehead, line over the eye, and the sides of the neck, as also the white patch on the sides of the upper-breast. It is further distinguished on the under-parts by the absence of black on the throat, sides of face, middle of the breast and abdomen, these parts being streaked with brown and buff on the sides of the face and throat, and dusky brown with twin buff spots on the breast and sides of the body; the feathers on the lower flanks dull-white barred with dusky-brown; under tail-coverts white inclining to buff on the lateral ones. The moult from the summer- to the winter-plumage in this species is similar to that of *Squatarola squatarola*.

Nest. "A mere hollow in the ground upon a piece of turfy land, overgrown with moss and lichen, and lined with broken stalks of reindeer moss" (Seebohm).

Eggs. "Clutch four; ground colour pale buff, spotted and blotched with rich purplish brown, with a few underlying ones of inky-grey. Axis 1.85 to 1.92 mm. Diameter 1.27 to 1.32." (Seebohm.)

Breeding-season. June (Middendorff), July (Seebohm).

MR. J. P. ROGERS writing from Derby, North-west Australia, says: "These birds are rare here only about six or eight seen. Some on the beach and two out on a plain. They are tamer than other species of waders. At Point Torment they were rare in December, but became more plentiful in February of 1911, and remained so till about 26th of March. By the 21st of April they had all left. They feed out on the grassy flats as well as on the beach." The same naturalist found them on Melville Island, Northern Territory, on November 2nd, 1911, where they were much tamer than those found in North-west Australia. None were seen after February 3rd, 1912.

Captain S. A. White writes: "This bird makes its appearance each year along the coast of Queensland in October, and works down along the coast to Tasmania and Kangaroo Island. It often appears in half breeding plumage but later on in the year loses all the black markings."

Mr. J. W. Mellor records that he has shot specimens at the mouth of the Port Adelaide River, "where they were running over the mud flats at low tide. This was in December, when they are in their non-breeding plumage. I saw them in the Capricorn Islands, off Queensland, in October, 1910. Some of the specimens were partly in breeding plumage. They apparently had just arrived from the north as they were not in good condition; later in the year they become very fat, and then it is with difficulty that they are skinned without soiling the feathers with grease and oil."

Mr. Tom Carter says: "A more numerous species than the preceding, arriving and departing about the same dates. This species mostly seeks its food about high-water mark in the debris of seaweed, etc. I noted them at Albany, South-west Australia in February and March, and at Devonport in North Tasmania in the middle of February."

EASTERN GOLDEN PLOVER.

Mr. Frank Littler of Tasmania sent me the following: "Small to medium flocks are to be seen round the mouth of the River Tamar, both sides, and also on the plateau in the Lake District in the midlands."

Legge (*Emu*, Vol. IV., p. 104, 1905), writing of this bird from Tasmania, says: "This species frequents the so-called Great Lake Plain, which is a rolling down more than a plain, and comprises a good many thousand acres of grass and low bush land, much of which is stony and affords a favourable haunt for this Asiatic visitor. Only a few birds were met with in March, 1902, during a two days' 'reconnoitring' trip made to the Lake by my son and myself. The Golden Plover is found more numerous on the open grassy country in the Midlands than elsewhere, and is nowhere a common bird in the island."

The bird was reported by Robson (*Trans. New Zeal. Inst.* 1883, Vol. XVI., p. 308, 1884) as breeding in New Zealand, but as the writer says it "undergoes little or no change from summer to winter plumage," it is obvious that he does not know the bird. It was found sitting on three eggs "on the 9th of January"!!! Under these conditions we cannot accept this.

Swinhoe records (*Ibis* 1863, p. 404) the birds breeding in Formosa. Layard also recorded its breeding on the islets off Anservata close to Noumea (*Ibis* 1878, p. 262). In the *Ibis* (1879, p. 107) it is noted as having a pair of downy chicks. In the same journal (1882, p. 532), as so much doubt was cast on the first statement, Layard says the "female was followed by a couple of chicks a few days old on the 20th of April, 1887"; and went on to say that several birds in full breeding-plumage had been seen there in May.

Seebohm,* who found this bird breeding in Siberia, writes: "On the 5th of June I had the pleasure of shooting my first Asiatic Golden Plover. In its voice it exactly resembles the Grey Plover. I noticed all the three variations with which I am so familiar in the note of the latter bird, but remarked that the third variation, which I take to be a combination of the two others more rapidly uttered, is much more frequently uttered by the Asiatic Golden Plover than by the Grey Plover. I secured many specimens of this interesting bird as it passed the Koo-ray-i-Ka on migration. I did not observe it again until we reached lat. $69\frac{1}{2}^{\circ}$ on the open Tundra just beyond the limit of forest growth. Not a trace of a pine tree was to be seen; and the birches had dwindled down to stunted bushes scarcely a foot high . . . The tundra was hilly, with lakes and swamp and bogs in the wide valleys and plains. I found myself upon an excellent piece of Plover-ground, covered more with moss and lichen than with grass, sprinkled with patches of bare, pebbly ground, and interspersed with hummocky plains, where ground-fruits and gay

* *Ibis* 1879, p. 153.

THE BIRDS OF AUSTRALIA.

flowers were growing. I soon caught sight of both male and female, and sat down with the intention of watching the latter into the nest. After waiting half an hour, during which the bird had wandered uneasily round and round me without showing any partiality for a special locality, I came to the conclusion, either that the eggs were hatched, in which case my watching was in vain, or that I was so near the nest that the female dare not come on. The male had a splendid black belly; and I decided to take my first good chance of a shot at him, and then to devote another half hour to a search for the nest. He proved to be, as I expected, the Asiatic Golden Plover, with grey axillaries. My search for the nest was a very short one. I found it in less than five minutes, within a dozen yards of my position. It was a mere hollow in the ground upon a piece of turfy land, overgrown with moss and lichen; and it was lined with broken stalks of reindeer moss. The eggs, four in number, were a size smaller than those of the Golden Plover, averaging $1\frac{36}{40} \times 1\frac{13}{40}$. (Eggs of the Grey Plover from the same locality average $2\frac{2}{40} \times 1\frac{16}{40}$.) These eggs were taken on the 13th of July, and were very much incubated.

“Among the eggs which had been collected for me at Golchecka was a second sitting of Asiatic Golden Plovers. Here the bird was extraordinarily common. I tried to watch several birds into the nest, but in every case without success. They behaved exactly as if they had young. I succeeded in catching one young bird in down, and reluctantly came to the conclusion that I was too late (on the 20th of July) for eggs. The young in down is quite as yellow as that of the Golden Plover.”

Seeböhm then goes on to say that the breeding of this bird in Formosa as recorded by Swinhoe is very doubtful, and also (in *Geogr. Distr. Charadri.*, p. 100, 1887) casts doubt on the records of Layard, Swinhoe, and Robson.

La Touche (*Ibis* 1892, p. 496) says: “Very abundant at Foochow in April and at the beginning of May. It passes again in October, but at that season seems to be less common. It winters at Swatow.”

Stejneger (*Bull. U.S. Nat. Mus.*, No. 29, p. 105, 1885) records: “The Asiatic Golden Plover visits Bering Island both on going northward in spring and southward again in autumn, but is not known to breed there, although suitable localities might easily be found; nor are they numerous during the migration either, but the small flocks remain in fall for a considerable time. They arrive about the middle of May, coming again after the 15th of September. In 1882 the last ones were observed on the 28th of October.”

Middendorff (*Sibirische Reise*, Vol. 11, p. 210, 1851) reports: “On the 29th May this bird appeared in full summer plumage on the Tundra on the Taimyr River, (74°). Large flocks arrived on the 4th of June. On the 17th of June there were eggs in the nest, the usual clutch being four. The males

EASTERN GOLDEN PLOVER.

and females kept near to the nest. The female being distinguished by having the black of the belly intermixed with white feathers. On the 2nd of August they began to collect on the Taimyr for the return flight; by the 9th they had all gone.

“On the Boganida (71°) they arrived on the 24th May. They remained in summer plumage until the beginning of August, but changed their plumage in the first half of that month. The last bird was seen on August the 31st.

“They nest in the moors round Udskoj-Ostrog, where a female in summer plumage was shot on the 31st of May.”

Radde (*Reisen Suden von Ost-Sibirien*, p. 322, 1863) shot a specimen on the Onon on September 27th, 1856, in full winter-plumage, also one on September 3rd in the Bureja Mountains in the same plumage.

The bird figured and described was collected at Botany Bay, New South Wales, in December, 1895.

The forms of Golden Plover are worthy of much study in connection with the relationship of those to the Grey Plover. The latter species is circumpolar and subspecies are difficult to differentiate, whereas the Golden Plover has become differentiated as two species, and of one species two subspecies are recognisable. The Grey Plover has black axillaries, while the Western European Golden Plover has pure white axillaries; the Eastern or Asiatic and the American Golden Plovers have smoky axillaries. The Eastern Grey Plover seems to be larger than the Western form, while the Asiatic and American Golden Plovers are considerably smaller than the European species; the Asiatic form being slightly smaller than the American one. The present bird was one of the first to be treated to a trinomial name, but we now regard it as specifically distinct from *Pluvialis apricarius*, while the American and Asiatic forms are considered subspecifically distinct as forms of *Pluvialis dominicus*.

In the *Catalogue* of the Birds in the British Museum subspecies were not recognised, so that both were lumped under the name *C. dominicus*; a long note was given, however, acknowledging that the American bird was usually larger. This is now so generally accepted (*cf.* A.O.U. *Checklist*, 3rd ed., p. 127, 1910, and *Hand-List British Birds*, p. 169, 1912), that no discussion is necessary. The nomination of the forms is without any complications.

Two figures of this Plover are included in the Watling Drawings, and they are so different that there can be no other conclusion but that they were made by different artists. My own investigations into the drawings known as the Watling Drawings lead me to believe that these include paintings made by at least two, if not more, artists. All those signed by Thos. Watling are

THE BIRDS OF AUSTRALIA.

alike, while all the other unsigned ones differ altogether in style, and maybe two other artists painted them. In the present case No. 245 is unsigned, and forms the basis of the Grisled Plover of Latham (*Gen. Synops.*, Suppl., Vol. II., p. 320), which was named *Charadrius griseus* in the Supplement to the *Index Ornith.*, p. lxxvii. This was correctly identified by Sharpe as referable to this species.

No. 253 is a painting by Watling, and from it Latham described his Brown Plover in the *Gen. Synops.*, Suppl., Vol. II., p. 320. The description there given reads: "This species has the habit of our *Golden Plover*; bill black; irides yellow; legs lead colour; plumage above a mottled brown; beneath brownish-white, a little mottled; tail black, dotted with white; legs lead colour. Inhabits New South Wales." Probably Sharpe never read this, as his identification is given as "*? Limonites ruficollis*," and no reference is given to *Charadrius fuscus* Latham, *Index Ornith.*, Suppl., p. lxxvi., which, however, depends upon Latham's Brown Plover alone. There seems no reason for the reference to *Limonites ruficollis*, as the painting faithfully shows the Pluvialine bill of the present species, and though a poor figure, is easily recognisable; indeed it is much more like *P. d. fulvus* than is drawing No. 245, which Sharpe placed there without hesitation.

GENUS—CIRREPIDESMUS.

CIRREPIDESMUS Bonaparte, Comptes Rendus Sci.

(Paris), Vol. XLIII., p. 417, 1856 Type *C. atrifrons*.

Also spelt, *Cirrhepidesmus* Harting, Ibis 1870, p. 379.

SMALL Plovers with stout bills, long wings, short legs, and medium-sized feet. The culmen is straight, with a swollen dertrum which is almost half the length of the culmen. The wings are long and pointed with the first primary longest. The tail is short and square. The metatarsus is short and reticulated throughout. The toes are not connected by a web at the base. No hind toe. The culmen is shorter than the middle toe without claw.

The small Plovers known as Ringed Plovers, Sand-Plovers or Dotterels, have caused much trouble to systematists on account of their general likeness yet structural dissimilarity. Having decided they should not be classed with *Pluvialis*, the names to be used needed careful consideration.

I have before noted the disposition of the American members in the genera *Oxyechus*, *Ægialitis*, *Ochthodromus*, and *Podasocys*, and discussed the generic nomenclature of the groups admitted by Sharpe in the *Cat. Birds Brit. Mus.*, showing (*Nov. Zool.*, Vol. XVIII., p. 5, 1911) that it is necessary to replace *Charadrius* by *Pluvialis* and *Ægialitis* by *Charadrius*, and that *Eupoda* was older than *Ochthodromus*.

At the present time I have to consider the species grouped by Sharpe in *Ochthodromus*, and I am compelled to conclude that they cannot be considered congeneric. As a matter of fact it will have been noticed that one of the species classed by Sharpe in *Ochthodromus*, viz. *mongolus* Pallas, appears in the A.O.U. *Checklist* under *Ægialitis*.

The diagnosis given by Sharpe for the genus *Ochthodromus* reads:—

“Bill stout or moderately so; culmen about equal to the length of the middle toe and claw.”

Thereunder was classed *O. obscurus*, *wilsonii*, *bicinctus*, *mongolus*, *geoffroyi*, *pyrrhothorax*=*atrifrons*, and *veredus*.

The first-mentioned is the large New Zealand Dotterel which has a very stout bill and short legs; the next is the monotypic type of the genus *Ochthodromus*, which is a very small bird with a very stout bill and short

THE BIRDS OF AUSTRALIA.

legs ; the next has only a medium bill with short legs, while *O. mongolus* and *pyrrhothorax=atrifrons* have stout bills with short legs. *O. geoffroyi* has again a very stout bill with short legs, while *O. asiaticus* and *veredus* have slender bills and long legs.

For *O. obscurus* the genus *Pluviorhynchus* was provided by Bonaparte, *Ochthodromus* having been previously introduced by Reichenbach for *O. wilsonius* ; *Cirrepidesmus* of Bonaparte included *O. pyrrhothorax=atrifrons* and *geoffroyi*, and the latter has been cited as type in the *Cat. Birds Brit. Mus.* (Vol. XXIV., p. 209), but by tautonomy the former is correctly considered as such.

There can also be little doubt that in this place Bonaparte transposed the names (a not uncommon fault of his), and that his "geoffroyi" was intended for "mongolus," and that in this place "mongolus" was written for "geoffroyi." Thus with *C. pyrrhothorax* was associated *C. "geoffroyi,"* which would not have seemed unreasonable were it not that under *Pluviorhynchus* two species are cited, *P. obscurus* and "mongolus." The bill of *geoffroyi* is almost exactly the same size and form as that of *obscurus*, while *C. pyrrhothorax=atrifrons* can only be regarded as subspecifically distinct from *mongolus*. Bonaparte was too careful a worker to make such a blunder in his birds, though he might easily cite the names incorrectly.

I have shown that Brandt introduced *Eupoda* for *O. asiaticus*, with which I propose to class *O. veredus*.

If all the former species are considered congeneric the two latter must be separated : the bills are quite dissimilar, and the long legs are characteristic.

The attached cuts show the differences between *Pagoa geoffroyi* and *Eupoda vereda*, which are more easily and clearly observed in the birds themselves and appear to show different origin.

In the A.O.U. *Checklist*, as above stated, *mongolus* is placed in a different genus from *wilsonius*, and I consider that course correct, but I am not inclined to class the former with *hiaticula*, the type of *Charadrius*. I am therefore making use of the genus *Cirrepidesmus* proposed by Bonaparte and of which the type is *C. pyrrhothorax=atrifrons*. I am classing in this genus *C. bicinctus* ; and I would recognise *Pluviorhynchus* for *P. obscurus*.

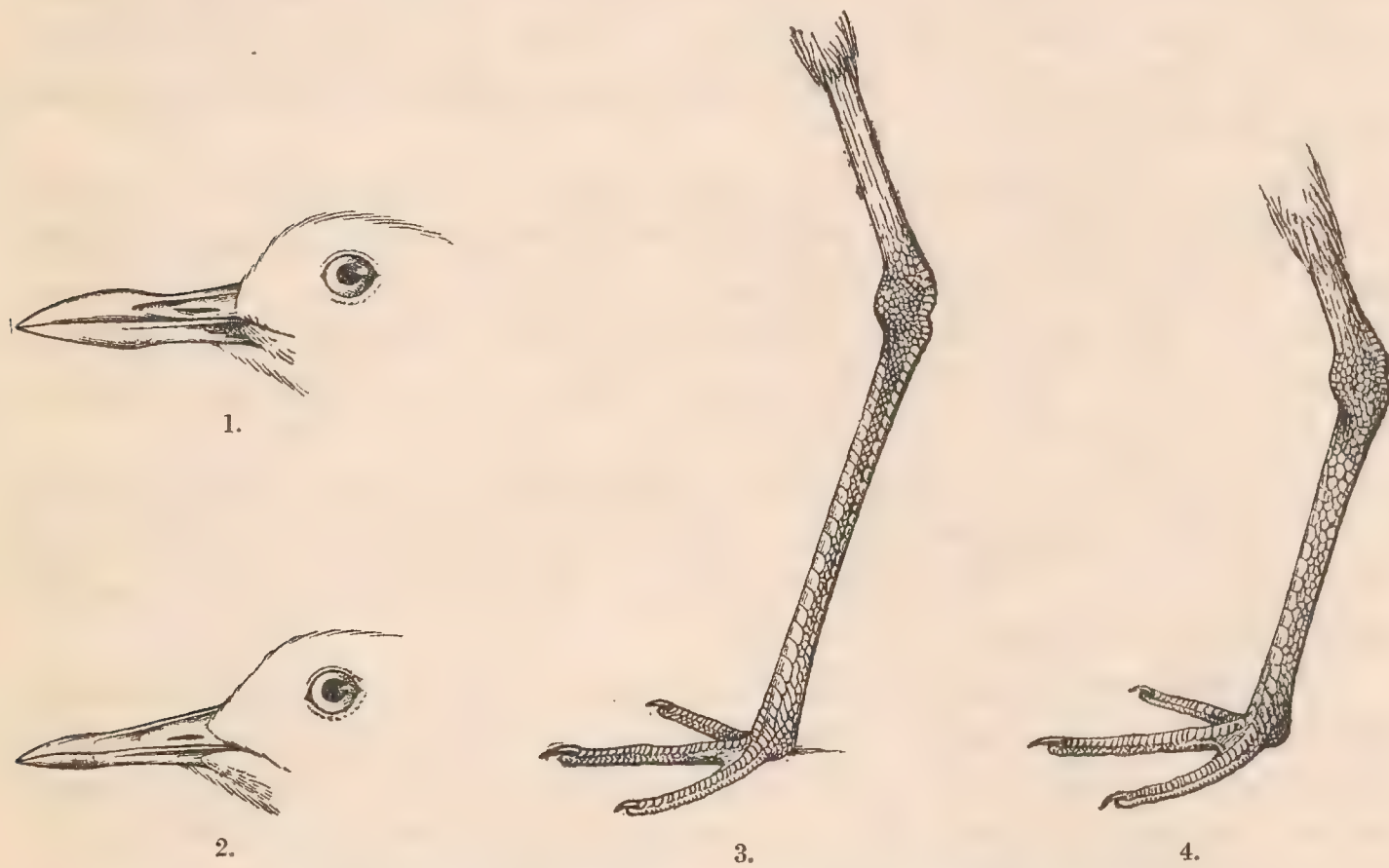
The species *C. geoffroyi* requires consideration : continually confused with *C. mongolus* on account of its similar coloration, the two were considered varieties of the same species by Gould and described as *Hiaticula inornata*.

A later writer found them difficult to separate, whereas by Baird, Brewer, and Ridgway they were placed in different genera. I am also adopting that course, and as no generic name has yet been provided for *C. geoffroyi*, I introduce *PAGOA*, gen. nov., with *C. geoffroyi* Wagler as type. I do not

CIRREPIDESMUS.

think that *C. veredus* can be generically differentiated from *C. asiaticus*, and as Brandt proposed *Eupoda* for the latter species, I am using that genus-name for the former.

As however some systematists may consider *Eupoda* preoccupied by the prior *Eupodes* (Koch, *Deutschl. Crust.*, Vol. I., tab. 8, 1835; Jardine and Selby's *Illus. Ornith.*, pl. 10, n.s., 1836), I propose for their use the genus *EUPODELLA*, nov., with *C. veredus* Gould as type. American authorities have often rejected names on account of prior names differing in one letter



1 and 4—*PAGOA GEOFFROYI*. 2 and 3—*EUPODA VEREDA*.

only, and under such conditions *Ochthodromus* is untenable on account of the prior *Ochthodromus* (Le Comte, *Ann. Lyc. Nat. Hist. New York*, p. 453, 1848) For the species *Charadrius wilsonia* Ord, the alternative name *PAGOLLA*, nov., is here proposed.

My subdivision of the genus *Ochthodromus* of the *Catalogue* of the Birds in the British Museum would therefore be summarised:—

Bill very stout and long, less than middle toe and claw; metatarsus short and thick; size large. Genus *Pluviorhynchus*; species *P. obscurus*.

Bill very stout and long, longer than middle toe and claw; metatarsus short; size medium. Genus *Pagoa*; species *P. geoffroyi*.

Bill stout and short, equal to middle toe and claw; metatarsus short; size small. Genus *Ochthodromus* or *Pagolla*; species *O. wilsonius*.

THE BIRDS OF AUSTRALIA.

Bill stout and short, less than middle toe *without* claw ; metatarsus short ; size small. Genus *Cirrepidesmus* ; species *C. mongolus*, *bicinctus*, and *pyrrhothorax=atrifrons*.

Bill long and slender, longer than the middle toe ; metatarsus long, twice as long as the bill, or more than twice as long as the middle toe ; size medium. Genus *Eupoda* or *Eupodella* ; species *E. asiatica* and *E. vereda*.

Little critical work on the generic dispositions of these small Dotterels has been done by British workers, but I find that Baird, Brewer, and Ridgway, in the "Water Birds of North America" (*Mem. Mus. Comp. Zool. (Harv.)*, Vol. XII.), Vol. I., 1884, commented upon the extralimital forms when defining the genera they adopted.

Thus on p. 171, dealing with the genus *Podasocys* Coues (Type *C. montanus* Townsend) they wrote : "At least one Old World species, *Charadrius veredus* Gould, seems to be strictly congeneric. We have carefully compared specimens, and can find no difference whatever in the details of structure. The *C. asiaticus* Pallas is said to be a near relation of *C. veredus*, and may also belong to this genus."

In my opinion *C. veredus* is easily differentiated by the exposed portion of the tibia being equal to the middle toe, while in *P. montanus* it is much shorter, and in the latter the legs are also shorter and stouter and the metatarsus more regularly reticulated.

Regarding *Ochthodromus*, on p. 168 they note : "An exotic species, which seems to be strictly congeneric with *O. wilsonius* is the *Charadrius geoffroyi* Wagler, which agrees minutely in all the details of structure, except that the legs are decidedly longer" ; and they might have added "the toes are also proportionately shorter ; the wing is longer." Their generic diagnosis (p. 129) read "*Ochthodromus*. Bill very large (as long as, or longer than, middle toe) ; the terminal half of the culmen much arched ; the base of the gonys forming a decided angle ; tarsus about one and a half times to nearly twice as long as middle toe."

I have already pointed out that by means of the proportion of the bill to the middle toe the two can be easily separated.

Key to the Species.

- A.* Head and nape pale brown ; lores and a patch under
the eye black *C. bicinctus*, p. 86.
(Summer.)
- B.* Lores and a patch under the eye pale brown ; bill
slender, depth 5 mm. *C. bicinctus*, p. 86.
(Winter.)
- C.* Fore-part of head and nape cinnamon-rufous ; lores
and a patch under the eye black *C. m. mongolus*, p. 92.
(Summer.)
- D.* Lores and a patch under the eye brown ; bill stout,
depth 6 mm. *C. m. mongolus*, p. 92.
(Winter.)

CIRREPIDESMUS BICINCTUS.

DOUBLE-BANDED DOTTEREL.

(PLATE 134.)*

CHARADRIUS BICINCTUS Jardine and Selby, Illus. Ornith., Vol. I., pl. xxviii., 1827; New South Wales.

Chestnut-breasted Plover Latham, Gen. Hist. Birds, Vol. IX., p. 324, 1824.

Charadrius bicinctus Jardine and Selby, Illus. Ornith., Vol. I., pl. xxviii., 1827; Potts, Trans. New Zeal. Inst. 1869, Vol. II., p. 67, 1870; *id.*, *ib.* 1872, Vol. V., p. 197, 1873; Buller, Birds New Zeal., p. 210, 1873; Seebohm, Geogr. Distrib. Charadr., p. 149, 1887; Buller, Birds New Zeal., 2nd ed., Vol. II., p. 3, 1888; *id.*, Trans. New Zeal. Inst. 1891, Vol. XXIV., p. 80, 1892; Forbes, Ibis 1893, p. 528 (Chatham Islands); Handly, Trans. New Zeal. Inst. 1895, Vol. XXVIII., p. 363, 1896.

Ægialitis bicinctus Gould, Synops. Birds Austr., pl. 32, fig. iii., 1837; Ramsay, Proc. Linn. Soc. N.S.W., Vol. II., p. 197, 1878; *id.*, Tab. List Austr. Birds, p. 19, 1888; Etheridge, Lord Howe Island, p. 17, 1889; Legge, Pap. Proc. Roy. Soc. Tasm. 1887, p. 94, 1888; *id.*, Austr. Assoc. Adv. Sci. 1892, p. 973; Campbell, *ib.*, Vol. V., p. 433, 1893.

Hiaticula bicincta Gould, Birds Austr., Vol. VI., pl. 16, 1845.

Ochthodromus bicinctus Gould, Handb. Birds Austr., Vol. II., p. 238, 1865; Heine, Nomencl. Mus. Hein., p. 337, 1889; Sharpe, Cat. Birds Brit. Mus., Vol. XXIV., p. 212, 1896; North, Birds County Cumberl., p. 110, 1898; Hutton, Trans. New Zeal. Inst. 1900, Vol. XXXIII., p. 259, 1901; Campbell, Nests and Eggs Austr. Birds, p. 790, 1901; Hutton, Emu, Vol. I., p. 141, 1902; Hall, Key Birds Austr., p. 82, 1906; Mathews, Handl. Birds Austral., p. 24, 1908; Littler, Handb. Birds Tasm., p. 129, 1910.

Charadrius bicinctus bicinctus Mathews, Nov. Zool., Vol. XVIII., p. 216, 1912.

Charadrius bicinctus incertus id., *ib.*, p. 217 (South-west Australia).

DISTRIBUTION. South Queensland, New South Wales, Victoria, Tasmania, South Australia, South-west Australia (New Zealand, Norfolk and Lord Howe Islands).

Adult male. General colour above olive-brown, including the hinder crown, hind-neck, sides of neck, entire back, scapulars, long innermost secondaries and upper wing-coverts; greater coverts margined with white at the tips; bastard-wing and primary-coverts tipped with white; primary-quills dark brown with white shafts,

* The Plate is lettered *Charadrius bicinctus*.



J G Keulemans del

Witherby & Co

CHARADRIUS BICINCTUS.
DOUBLE-BANDED DOTTEREL.

DOUBLE-BANDED DOTTEREL.

somewhat paler on the inner webs towards the base, basal portion of inner primaries white on the outer web ; secondaries brown with pale inner webs and fringed with white at the tips on the outer web ; middle tail-feathers rather darker brown than the back, becoming paler on the outer feathers which have white edges at the tip, the outermost pair almost pure white ; fore-part of crown, lores, and cheeks black like the broad band which crosses the lower-throat ; a wide chestnut band on the lower-breast ; forehead and a narrow line over to behind the eye white like the throat, the space dividing the chestnut-and-black bands on the breast, abdomen, under tail-coverts, axillaries, and under wing-coverts ; bill black slightly tinged with olive ; iris blackish-brown, eyelids scarlet ; feet pale sickly yellowish-white, the joints of the toes and knees browner. Total length 190 mm. ; culmen 19, wing 127, tail 56, tarsus 33.

Adult female. Similar to the adult male, but the colours not so distinct.

Female, nearly adult. Upper-parts similar to the adult male, but the feathers everywhere margined with rufous, the black on the forehead and cheeks scarcely pronounced, the dark band on the lower-throat brown instead of black, and the chestnut band on the breast much paler and narrower.

Adult, in winter-plumage. Distinguished from the adult in breeding-plumage by the absence of the black on the lores, cheeks, and fore-part of head, also the chestnut and black bands on the lower-throat and breast.

Young. Differs from the adult in the feathers of the upper-surface being margined with rufous, by the absence of any black on the forehead, lores, and cheeks, these parts being washed with sandy-buff, which colour is also shown on the lower-throat, where the black band of the adult is indicated by an irregular band of brown feathers ; but there is no sign of a chestnut band.

Other immature birds, in my collection, differ from the adult in having the bands on the chest and throat narrower, less defined, and mixed with white, and the black on the forehead, lores, and cheeks less pronounced.

Chick. " Covered with soft down of a bright sandy-yellow on the upper surface, changing to yellowish-white on the under parts ; the crown of the head and the back prettily mottled with dark brown, of which there is also a broad streak on the wings and thighs " (Buller).

Fledgling. " Feathers of the upper parts brown largely margined with fulvous, under parts white with fulvous markings on the breast ; the sides of the head and lower part of back and rump covered with down of a dull sandy yellow spotted with black, and with fluffy down still adhering to other parts of the body. Bill, dark brown, legs brownish-grey." (Buller.)

Nest. A depression in the earth (Potts).

Eggs. " Clutch three. Greenish-brown, much sprinkled with dark brown markings. Axis 35 mm. ; diameter 26." (Potts.)

Breeding-season. August and September (Potts, New Zealand), December (Iredale, New Zealand).

CAPTAIN SAMUEL WHITE of South Australia, says : " I have fairly often met with this bird ; they seem to congregate in small flocks and run with great rapidity on the sea shore and seem to have a remarkably swift flight."

Mr. J. W. Mellor records this species from Kangaroo Island on the open beaches ; and from Yorke Peninsula, South Australia. On the latter place they were " in small flocks of 6 to 12 running over the open mud and sandy flats near Stansbury (April, 1911). They were searching for small marine insects

THE BIRDS OF AUSTRALIA.

and were probing the soft sand and mud with their bills, as the tide went out. One was shot, which was dull in colour with no definite banding, as in the breeding season."

Mr. Charles Belcher of Victoria sends me the following: "Though this bird has never been known with certainty to breed in Australia, I have little doubt that in some cases it does so. Flocks make their appearance in the Geelong district in April and leave again early in October, but stragglers may be seen much later near the Breakwater on the Barwon River. There is an open grassy flat used as a training course, to which these birds repair to the number of some hundreds every autumn; it is an unlikely looking spot for waders, but the Dottrel never fail to appear there after the Easter rains. Another locality which they favour is the Samphire Marshes at the Geelong Salt-works, where they associate with other visiting *Limicoline* birds. Once I saw three or four on the ocean beach at Torquay."

Mr. Tom Iredale writes: "This species has inherited the well-known mannerisms often recorded about other species of the family *Charadriidæ* when its nest is in danger.

"On the Rakaia river bed my friend Mr. W. R. Brook Oliver and myself spent some half hour over a couple of birds. The nest was upon a square patch of gravel and whenever we approached a certain place a heartbroken cry would be heard, and looking towards the place whence it issued, a wounded bird in a pitiful heap would be seen. Upon approach it would flutter and drag itself away until it thought safety of its young had been achieved and then its wounds were healed and it would fly piping away. This happened many times. Once it flew close to us and then dropped in a heap just as if it had been shot. That nest was not found. In December two nests were found among the seawrack of the highest tide on the Waipara beach. These each contained two fresh eggs, and as flying young were commonly noted, there can be little doubt these were second broods."

Mr. Tom Carter says he noted this species at Devonport, Tasmania, on February 14th, 1909.

Mr. Stuart Dove* writes: "It may interest you to know that I have seen the double-banded Dottrel several times this spring on our beaches, although it is supposed to go to Southern New Zealand to breed. A pair was observed on 15th September, and on 30th December two pairs were seen in company with the Red-capped species, which is always here."

Legge† records: "This Dottrel is apparently migrating to this colony. It appears in March, remaining till July, and perhaps later; and at the time

* Littler, *Handb. Birds Tasm.*, p. 130, 1910.

† *Pap. Proc. Roy. Soc. Tasm.* 1887, p. 94, 1888.

DOUBLE-BANDED DOTTEREL.

of its arrival it is mostly in young plumage, or with the adult bands in an imperfect state, which seem to indicate that there is a change of colouring after breeding. The dress is, however, so variable, that unless a large series of specimens are got together, shot at all times of the year, the change could not properly be worked out.

“The plumage of the young bird in April is as follows: Head, hind neck, back and wings, earthy brown, the feathers of the back with narrow rufescent edgings; the scapulars and wing-coverts more conspicuously edged than in the adult; forehead whitish grading into the brown of the head; throat and under surface white tinged with buff more or less beneath the ear-coverts; a more or less incomplete brown band across the upper part of the chest, in some only a brown wash; legs and feet dark olive-green. As time goes on the brown pectoral band becomes darker, and in May blackish feathers, tipped with white are acquired; at the same time the surface feathers of the lower band begin to appear and may be found lying beneath the white plumage. In June specimens are procurable with the black band showing a want of uniformity on account of the feathers being pale tipped here and there, and the rufous band the same owing to the white tippings. At the end of July, by a change in the feathers the bands become uniform and well defined. During this time the forehead bar and the loreal stripe extending beneath the eye and down the neck to the band, have been developing and becoming black. An examination of a large number of specimens has led to this diagnosis which I think in the main will be found correct, but it is probable that ‘birds of the year’ never get the deep chestnut band in its completely uniform state.

“The double-banded dottrel frequents inland districts and is common at the Salt Pans on the Mona Vale Estate from March until July and perhaps later. Wing in adult males 5.0 to 5.2 inches.”

Mr. A. J. North* reports: “Common about Como; Botany Swamps, and the flats at the mouth of Cook’s River (N.S.W.) during April, May and June . . . all the examples I have seen . . . were in winter plumage.”

Potts† writes: “Our banded Dotterel is worthy of belonging to the family of the Charadriæ, for it is one of the most restless and wariest of birds, during the breeding-season. On the appearance of an intruder, it flies round and round, uttering its note of warning, then alighting on some rising ground, it steadily kept watch. During the time it remains on the look out, it indulges in a peculiar habit of jerking its head backwards and forwards, uttering its monotonous twit, twit, at intervals.

* *Birds County Cumberl.*, p. 110, 1898.

† *Trans. New Zeal. Inst.* 1869, Vol. II., p. 67, 1870.

THE BIRDS OF AUSTRALIA.

“It commences breeding early in the spring; its simple nesting-place may be found on ‘the plains’ or in river beds. It lays three oval-shaped eggs, greenish-brown, much sprinkled with dark-brown markings; they measure 1 inch, 4 lines in length with a breadth of 1 inch.

“The young are exceedingly active, the little brown puffs of down may be observed running with great swiftness on being alarmed. In the autumn the Dotterel assembles in flocks of considerable numbers.”

Buller* says “This pretty little Dottrel is very common on our shores, and is frequently met with also at a considerable distance inland. It associates in flocks, and is always to be found on the ocean-beach, or on the dry sands and grassy plains in the vicinity of the coast . . . it is very commonly met with on the pastures several miles from sea.

“It is more active in its habits than the preceding species (*Char. obscurus*), running swiftly near the sands, and stopping at short intervals to bob its head and utter a rather plaintive note. It rises in the air with a very rapid movement of its wings, and usually adopts a circular course, the whole flock wheeling simultaneously and descending to the ground in an oblique direction.

“In the high sandy flats near the sea shore where the bright pingao grass mixes with the wild sage, this bird may always be met with in the breeding-season, which commences as early as August . . . In the location of its nest itself there is very little attempt at concealment, the bird apparently trusting more for protection to the assimilative colouring; but after the young are hatched out, the old birds (particularly the female) manifest considerable solicitude for the safety of their offspring, and feign lameness or a damaged wing for drawing intruders away, a device which very often succeeds. The young bird runs the moment it quits the shell, and is not slow to second its parent in the art of self-preservation. Its sandy-colouring makes it almost indistinguishable when squatting on the ground, and it has the instinct to remain perfectly motionless the moment it hears the note of alarm, even allowing itself to be handled without betraying a sign of vitality.”

The bird recorded as this species by Ramsay from Cardwell is probably *C. mongolus*. I consider the bird described by me as above from South-west Australia must for the present be referred to the typical form, as the characters I utilised for separation have also been observed in Neozelanic specimens and have not there proved constant.

The bird figured and described is a male.

This at the present time constitutes one of the problems of Australian ornithology. A very ordinary bird in New Zealand, it has been thought that

* *Birds New Zeal.*, 2nd ed., Vol. II., p. 4, 1888.

DOUBLE-BANDED DOTTEREL.

the birds being more commonly observed in Southern Australia in the winter, migrated thence to breed. This does not seem a reasonable solution, as the birds are as common in New Zealand in the winter time as in the summer. In that place they make seasonal movements, but there seems no grounds for supposing that they leave that country, while most migration-movements are north to south and not east to west. Further, its occurrence in South-west Australia seems to prohibit the supposition that the latter birds came from New Zealand. It seems certain that the Australian form will later be found breeding in Australia, and also distinct from the New Zealand bird. It seems strange that this common New Zealand bird was first described from New South Wales, and it is also strange that no long series are available from New Zealand where it is so abundant.

Order CHARADRIIFORMES¹

Family CHARADRIIDÆ.

No 173.

CIRREPIDESMUS MONGOLUS MONGOLUS.

MONGOLIAN SAND-DOTTEREL.

(PLATE 135.)*

CHARADRIUS MONGOLUS Pallas, Reise Russ. Reichs, Vol. III., p. 700, 1776; Mongolia.

Charadrius mongolus Pallas, Reise Russ. Reichs, Vol. III., p. 700, 1776; Mathews, Nov. Zool., Vol. XVIII., p. 217, 1912.

Charadrius mongolius Pallas, Zoogr. Rosso-Asiat., Vol. II., p. 136, 1827 (Mongolia); Middendorff, Sibirische Reise, Vol. II., p. 211, pl. xix., 1851; Schrenck, Vögel des Amur-Landes, p. 411, 1860; Radde, Reisen Süden von Ost-Sibir., p. 324, 1863; Seebohm, Geogr. Distr. Charadr., p. 147, 1887.

Charadrius cirrhepidesmos Wagler, Syst. Av., Charad., p. 61, sp. 18, 1826 (Java).

Charadrius gularis id., ib., p. 69, sp. 40 (substitute-name for *Ch. mongolus* Pallas).

Charadrius sanguineus Lesson, Manuel d'Orn., Vol. II., p. 330, 1828 (Java).

Charadrius curbepeidesmos Gray, in Griffith's ed. Cuvier's Anim. Kingd., Vol. VIII., p. 313, 1829 (? misprint).

Hiaticula mongola Gray, List Spec. Birds Brit. Mus., pt. III., p. 69, 1844.

Hiaticula inornata Gould, Birds Austr., Vol. VI., pl. 19, 1846 (small figure).

Ægialitis inornatus Reichenbach, Nov. Synops., Av., No. v., 174, cc. xcvi., 2426-7, 1851.

? *Cirrepidesmus geoffroyi* Bonaparte, Comptes Rendus Sci. (Paris), Vol. XLIII., p. 417, 1856.

Charadrius inornatus Gray, Proc. Zool. Soc. (Lond.) 1858, p. 187.

Ægialites mongolicus Swinhoe, *ib.* 1863, p. 310; Harting, Ibis 1870, p. 384; Salvadori, Ornith. Papua e Mol., Vol. III., p. 299, 1882; Ramsay, Tabl. List Austr. Birds, p. 19, 1888; Legge, Austr. Assoc. Adv. Sci. 1892, p. 972.

Ochthodromus inornatus Gould, Handb. Birds Austr., Vol. II., p. 237, 1865.

Ægialites mongolus Swinhoe, Proc. Zool. Soc. (Lond.) 1870, p. 140; Ramsay, Proc. Linn. Soc. N.S.W., Vol. II., p. 197, 1878; Stejneger, Bull. U.S. Nat. Mus., No. 29, p. 105, 1885; *id.*, Proc. U.S. Nat. Mus., Vol. X., p. 126, 1887; Taczanowski, Mem. l'Acad. Imp. Sci. St. Petersb., ser. VII., Vol. XXXIX., p. 822, 1893.

Charadrius sonneratii Gray, Handl. Gen. Spec. Birds, pt. III., p. 15, 1871 (n.n.).

Charadrius pyrrhothorax (not Temm.) Fritsch, Vögel Eur., pl. 33, fig. 18, 1871.

*The Plate is lettered *Charadrius mongolus*.



J G Keulemans del

Witherby & Co

$\frac{3}{4}$
CHARADRIUS MONGOLUS.
(*MONGOLIAN SAND-DOTTEREL*).

MONGOLIAN SAND-DOTTEREL.

Eudromias mongolicus Severtzoff, Turkest. Jevotnie, p. 69, 1873 ; Dresser, Ibis 1876, p. 327.

Ægialitis mastersi Ramsay, Proc. Linn. Soc. N.S.W., Vol. I., p. 135, 1876 (North-east Queensland) ; *id.*, *ib.*, Vol. II., p. 197, 1878 ; *id.*, Tab. List Austr. Birds, p. 19, 1888 ; Legge, Austr. Assoc. Adv. Sci. 1892, p. 973.

? *Ægialitis bicinctus* Ramsay, Proc. Zool. Soc. (Lond.) 1877, p. 337 (Cardwell).

? *Ægialitis ruficapilla* (not Temm.) Blakiston and Pryer, Ibis 1878, p. 219 (*cf.* Seebohm, *ib.*, 1879, p. 25).

Cirripidesmus mongolicus Heine, Nomencl. Mus. Hein., p. 336, 1888.

Ochthodromus mongolus Sharpe, Cat. Birds Brit. Mus., Vol. XXIV., p. 223, 1896 ; Campbell, Nests and Eggs Austr. Birds, p. 793, 1901 ; Carter, Emu, Vol. III., p. 176, 1904 ; Hartert, Nov. Zool., Vol. XII., p. 201, 1905 ; Hall, Key Birds Austr., p. 82, 1906 ; Mathews, Handl. Birds Austral., p. 24, 1908 ; Ogilvie-Grant, Ibis 1910, p. 182.

Ochthodromus bicinctus Carter, Emu, Vol. III., p. 175, 1904 (bird in Tring Museum examined).

DISTRIBUTION. Siberia (breeding) southwards to Australia.

Adult male, in summer-plumage. Lores, feathers surrounding the eye, ear-coverts, and a band across the fore-part of the crown black ; fore-part of head and sides of crown cinnamon-rufous, becoming darker rufous on the hind-neck and continued on to the chest and sides of breast, where it becomes bright chestnut ; forehead, throat, abdomen, under tail-coverts, and axillaries white ; a very narrow line of black dividing the white of the throat from the rufous chest-band ; lesser under wing-coverts white, more or less spotted with brown ; greater under wing-coverts grey with white at the tips ; middle of crown, back, scapulars, wings, and middle tail-feathers pale brown ; upper tail-coverts inclining to grey fringed with white ; bastard-wing, primary-coverts and quills darker than the back, and inclining to black ; greater wing-coverts and secondaries fringed with white at the tips ; outer tail-feathers paler than the middle ones, and tipped with white, the outermost pair white on the outer web ; bill and iris black ; feet lead-grey. Total length 204 mm. ; culmen 17, wing 135, tail 52, tarsus 31.

Adult female, in summer-plumage. Similar to the adult male, but the characters on the head less pronounced.

Adult, in winter-plumage. Distinguished from the nuptial-dress by the absence of cinnamon-rufous on the head and hind-neck, and the rufous and black bands on the fore-neck, these parts being represented by greyish-brown more sparsely on the fore-neck ; forehead and eyebrow white without any black band on the former ; lores, cheeks, and ear-coverts brown.

Nest. "A slight hollow in the ground. Lined with leaves and stems of *Angelica archangelica*" (Stejneger).

Eggs. Clutch, three ; "Ground color between cream-buff and clay color ; spotted, less numerous at the small end, with markings of irregular size, chiefly of clove brown, bistre, and even as light as wood brown. The lighter markings are for the most part rather obscure, as if imbedded in the shell, or as if laid on before the ground color. The markings are irregularly confluent on the greater hemisphere of the egg.

"The ground color is darker than in eggs of *Æg. hiaticula*, and the markings assume about the same shapes as in that species, but the larger markings are somewhat greater in extent in *mongolus*, and there is not such a preponderance of the darkest

THE BIRDS OF AUSTRALIA.

markings, as in *hiaticula*. The spots are not so heavily confluent as in some eggs of *hiaticula*. The eggs measure 37 by 27, 36 by 26.5, 36 by 27.5 mm.

"The above description is from a set of three eggs, collected on Bering Island by Dr. L. Stejneger, June 4, 1882 (*U.S. Nat. Mus.*, No. 21770). Two eggs of a set of three collected at the same place and date (No. 21772), have a ground color that is nearly olive-buff; the third egg of the set is like those of the set described above.

"The colors mentioned are from Ridgway's *Nomencl. of Colors*, 1886." (Richmond MS.)

Breeding-season. June (Stejneger).

MR. J. P. ROGERS, writing from North-west Australia, says: "On Nunranbah Station, Fitzroy River, 140 miles from Derby, this bird was first seen on September 2nd, 1910; on the 9th a flock of 20 was observed and by the 15th they were numerous. On the 20th of October they were common on the lower Fitzroy River and Salt Marshes near Derby.

"On Point Torment, North of Derby, they were rare after the 22nd of February, 1911, and had apparently all gone by the 10th April. Odd lots were seen amongst the samphire bushes on the edge of the marsh.

"They are birds of the grassy flats and were never found on the beach, nor were they associated with other species.

"On Melville Island, Northern Territory, they were very common."

Swinhoe* writes: "On the South China coast this bird is a rare winter visitant; but in Hainan I found small parties of them on two occasions in March, 1868, and procured two examples in winter dress. In May of the same year numbers of them were exposed in the markets at Shanghai in summer plumage."

Stejneger,† writing from the Commander Islands, reports: "A common breeding bird on both islands, appearing during the first half of May and returning south about the end of September."

The same writer‡ goes on to say: "The Mongolian plover is a very common resident on the Commander Islands, in fact, one of the most characteristic birds of their fauna.

"It is one of the brightest and handsomest shore birds, and is always gladly welcomed when making its appearance during the first half of May. I used to watch with delight these elegant runners, wondering at the almost incredible rapidity with which they move their legs when chasing each other over the pebbly beach, or trying to escape the approaching hunter. Very soon, however, the pairs retire to the place chosen for the summer home, and, as soon as the eggs are laid, the birds become more shy, and do not expose themselves as much as they did before. They do not fly directly from the

**Proc. Zool. Soc. (Lond.)* 1870, p. 140.

†*Proc. U.S. Nat. Mus.* 1887, Vol. X., p. 126.

‡*Bull. U.S. Nat. Mus.*, No. 29, p. 108, 1885.

MONGOLIAN SAND-DOTTEREL.

nest either, but run away a distance from it before taking wing. It is therefore exceedingly difficult to find the nest, and I do not wonder that none of the Russian travellers have procured the nest and eggs. I myself only succeeded in finding a few nests with eggs. The eggs were found during the first days of June and young ones about the middle of July. About this time the families retire from the beach and are now met with in the interior, where they ascend the mountains in search of tender insects. I frequently met them at an altitude of 1,000 feet or more above sea level. About the middle of September the families return to the lowlands and to the beach, soon afterwards leaving the island.

“The call-note is a clear, penetrating ‘drrrriit.’

“While at Glinka, on Copper Island, in July, 1883, a young bird of this species, not yet fully feathered, was brought to me alive. Allowed to run free on the floor it immediately commenced a very animated pursuit of the rather numerous flies, which were caught with remarkable precision and rapidity, and devoured with an insatiable appetite. The little fellow did not pay any attention to the presence of several persons in the small room, but when the dog rose from his nap in the corner, the swift-footed fly-killer suddenly dropped flat on the floor, with withdrawn neck, making himself as small and flat as possible, and remained thus perfectly immovable until the dog turned his head the other way, when he ran off to the darkest corner of the room, where he remained until the former laid down in his old place. Then he started the fly-hunting again; the dog rose once more, and the same performance was repeated. Within half an hour, however, he had learned that the dog did not take any notice of him whatever, and consequently he afterwards paid as little attention to the dog as to man.

“The nest, spoken of above, was found on the islet Toporkof on the 4th of June, 1883, and contained three eggs. They were lying with their pointed end inwards and downwards, in a slight hollow in the ground between the stems of four *Angelica archangelica*. Dry particles of the leaves and stems of this plant, and numerous seeds of the same, formed the nest, being evidently brought together by the bird itself. The situation of the nest was about 40 feet from the line of high water, and about 14 feet above the level of the sea.

“One of the eggs was quite clear; the second contained a small embryo in which only the large eyes were distinguishable; the third had a larger foetus, with well developed wings, legs, etc.

“In general appearances the eggs recall those of *Ægialitis semipalmata* being larger, however, and of a somewhat deeper ground colour, in two more olive, in the other more buff. The spots are on the whole smaller than in

THE BIRDS OF AUSTRALIA.

average specimens of the former, being in that respect more like *Æ. hiaticula*. They consequently are more unlike eggs of *Eudromias morinellus* than those of typical *Ægialitis*: dimension 36 to 37.25 by 26.5 to 27.25."

Middendorff* says: "On June 30th our bird arrived in large flocks in the neighbourhood of the mouth of the Uda river in the Sea of Ochotsk. Until July 21st, these flocks were seen without my coming across any pairs or breeding birds, and on closer examination I found that they consisted almost entirely of females. They were in summer plumage. When wounded by a shot and pursued, they swam and dived pretty well."

Schrenck† writes: "The Amur specimens of this species entirely agree with those of Middendorff's drawings of specimens from Udskoi-Ostrog.

"I found it on the lower Amur near Chome, between the Gorin and Chongar-Mundung on the 9th (21) July in large flocks which kept together on the sandy, muddy shores of the Stromes. The flocks were nearly entirely composed of females. We got 7 females and 1 male out of 8 birds shot. Maack killed *Ch. mongolians* on the 29th June (11 July) on the Southern Amur near Ssungari-Mundung."

Radde‡: "Like Pallas I seldom found this pretty species in the north-east portion of Mongolia. It appeared on the Tarei-Nor on the 12th of May, 1856, in a flock of about 50 individuals. The birds were then unusually wild; they flew along the edge of the sea, and frequently performed the most skilful evolutions, and uttered no piping note. An adult male shot from this flock closely resembles the picture given by Middendorff. In no other parts of South-east Siberia did I find this sandpiper."

Of the birds figured, the one in full breeding-plumage was collected in Japan on April 21st, 1882, and the one in winter-plumage at Point Torment, North-west Australia, on February 21st, 1912, by Mr. J. P. Rogers.

The only points of interest to Australian students in the synonymy of this bird, are that Gould described this species and the next as new, under the name *Hiaticula inornata*, and later Ramsay again described this species under the name *Ægialitis mastersi*. This bird was also mistaken by Ramsay for *C. bicinctus* from Cardwell, and again recorded from the North-west by Carter as *C. bicinctus*: these can always be separated by the more slender bill of the latter.

In the *Catalogue* of the Birds in the British Museum, Vol. XXIV., p. 226, 1896, a species is included under the name *Ochthodromus pyrrhothorax*: the primary reference is given as *Charadrius pyrrhothorax* Gould, *Birds Eur.*, Vol. IV., pl. 299, 1837 (ex Temm. MSS.), but a prior name is quoted as *C. inconspicuus*

* *Sibirische Reise*, Vol. II., p. 211, 1851.

† *Vögel des Amur-Landes*, p. 411, 1860.

‡ *Reisen Süden von Ost-Sibir.*, p. 324, 1863.

MONGOLIAN SAND-DOTTEREL.

Wagler, *Isis* 1829, p. 651 (ex Licht. in Mus. Berol.). Upon reference, a bird is found described from "Bengala," which is undoubtedly this bird, but upon the previous page Wagler had introduced *Charadrius atrifrons*, also from "Bengala." This also refers to this bird, and Wagler's name should replace Gould's. It is strange that this name is not even quoted in the *Catalogue*, especially as Gray, in the *Handl. Gen. Spec. Birds*, pt. III., p. 15, 1871, had correctly cited it in the synonymy of *pyrrhothorax* Temm.

This form can only be considered as a subspecies of *mongolus*—indeed in winter-plumage they can only be separated with difficulty: *mongolus* (typical) has a slightly shorter, stouter bill, and a slightly shorter tarsus. In summer-plumage the same differences of course exist, but in *C. m. atrifrons* the forehead is generally all black with very small white markings when present, while *C. m. mongolus* has white predominant in the forehead-markings. In the latter the pectoral band is generally of a darker colour, and a black line is commonly present dividing the pectoral band from the white throat—a suspicion of this black line has only once been noted in undoubted *C. m. atrifrons*.

My nomenclature of the two forms would read—

Cirrepidesmus mongolus mongolus (Pallas).

"Breeds in Eastern Siberia and the Commander Islands, and even extends its range to Alaska. Passes through China on migration to the Philippines and the Moluccas, wintering in these islands and Australia."

Cirrepidesmus mongolus atrifrons (Wagler).

"Breeds in Kirghis Steppes and probably throughout Central Asia, wintering in Africa, India and the Malay Peninsula and Islands" (*Cat. Birds Brit. Mus.*). In the British Museum there are a pair and young one procured by Dr. Longstaff in Thibet.

As synonyms may be quoted *C. inconspicuus* Wagler, *C. pyrrhothorax* Gould, and *C. rufinellus* Blyth.

GENUS—P A G O A, nov.

Type *P. geoffroyi*.

PLOVERS of medium size with very stout bills, long wings, short legs, and medium feet.

The characters are as in *Cirrepidesmus*, but the long powerful bill, which is longer than the middle toe and claw, at once characterises this genus. This genus I have discussed (*ante*), and its acceptance obviates the misnaming of specimens, and enables the correct nomination of the species to be quickly arrived at whatever state of plumage the bird may be in.

In connection with these Small Plovers it seems imperative to utilise very restricted genera, as the widening at once admits all the Plovers, whatever form they be. The latter course cannot conduce to the advancement of science, as it is quite obvious that the genus would cover a family, and the inclusion of the Golden and Grey Plovers borders upon the absurd. The extreme opposite course appears more accurate, as I have learned from my study of the Petrels that small, apparent differences were sometimes due to deep-seated causes: there it was seen that the whole-black, stout bill of *Pterodroma* was of different origin to the light-coloured longer bill of *Puffinus*; yet in the adults, colour and form were better characteristics than detailed description. I suggest a somewhat parallel case here, and propose that the particoloured-bill of *Charadrius* (= *Ægialitis* formerly) points to a different origin to that of the wholly-black bill of the present genus, for instance. I will go more into detail under that genus.



$\frac{3}{4}$

CHARADRIUS GEOFFROYI.
(LARGE SAND-DOTTEREL).

Witherby & Co

PAGOA GEOFFROYI.

LARGE SAND-DOTTEREL.

(PLATE 136.)*

CHARADRIUS GEOFFROYI Wagler, Syst. Av., Charadr., p. 61, sp. 19, 1827 ; Java.*Charadrius asiaticus* (not Pallas) Horsfield, Trans. Linn. Soc. (Lond.), Vol. XIII., p. 187, 1821.*Charadrius hiaticula* (not Linné) Audouin, Descr. de l'Égypte, Vol. 23, p. 385, 1826.*Charadrius geoffroyi* Wagler, Syst. Av., Charadr., p. 61, sp. 19, 1827 ; Danford, Ibis 1880, p. 94 ; Seebohm, Geogr. Distr. Charadr., p. 146, 1887 ; Mathews, Nov. Zool., Vol. XVIII., p. 217, 1912.*Charadrius leschenaultii* Lesson, Manuel d'Orn., Vol. II., p. 322, 1828 (India).*Charadrius columbinus* Wagler, Isis 1829, p. 650 (Arabia).*Charadrius griseus* (not Latham) Lesson, Traité d'Orn., p. 549, 1831 (India) (substitute-name for *Ch. leschenaultii* Lesson).? *Ægialitis macrorhynchus* Ewing, Tasm. Jour., p. 57, 1840 (n.n.).*Charadrius rufinus* Blyth, Ann. Mag. Nat. Hist., Vol. XII., p. 169, 1843 (n. n.) ; *id.*, *ib.*, p. 231, 1843.*Hiaticula geoffroyi* Rüppell, Syst. Uebers. Vögel Nord-ost Africa, p. 118, 1845.*Hiaticula geoffroyii* Gray, Cat. Mam. Birds Nepal pres. Hodgson Brit. Mus. 1846, p. 132.*Hiaticula inornata* Gould, Birds Austr., Vol. VI., pl. 19, 1846 (large figure) (Torres Strait).*Charadrius fuscus* (not Latham) Pucheran, Revue Zool. 1851, p. 282 (India) (substitute-name for *Ch. leschenaultii* Lesson).*Hiaticula columbina* Lichtenstein, Nomencl. Av. Mus. Zool. Berol., p. 94, 1854.*Ægialitis gigas* Brehm, Vollständige Vögelfang, p. 283, 1855 (Suez to East Europe).*Charadrius gigas id.*, Naumannia 1855, p. 289.? *Pluviorhynchus mongolus* Bonaparte, Comptes Rendus Sci. (Paris), Vol. XLIII., p. 417, 1856.*Ægialites geoffroyi* Heuglin, Syst. Uebers. Vögel, Nord-ost Africa, p. 56, 1856 ; Harting, Ibis 1870, p. 378, pl. XI. ; Dresser, Birds Europe, Vol. VII., p. 475, 1878 ; Ramsay, Proc. Linn. Soc. N.S.W., Vol. II., p. 197, 1878 ; Kelham, Ibis 1882, p. 9 ; Salvadori, Ornith. Papua e Mol., Vol. III., p. 298, 1882 ; Ramsay, Tab. List. Austr. Birds., p. 19, 1888 ; La Touche, Ibis 1892, p. 496 ; Legge, Proc. Austr. Assoc. Adv. Sci., 1892, p. 971.*The Plate is lettered *Charadrius geoffroyi*.

THE BIRDS OF AUSTRALIA.

Ægialites leschenaultii Swinhoe, Ibis 1861, p. 342; *id.*, Proc. Zool. Soc. (Lond.) 1863, p. 309.

Ochthodromus inornatus Gould, Handb. Birds Austr., Vol. II., p. 237, 1865.

Charadrius columboides Gray, Handl. Gen. Spec. Birds, pt. III., p. 14, 1871.

Eudromias crassirostris Severtzoff, Turkest. Jevotnie, p. 146, 1873 (Fort Peroffsky, Turkestan); Dresser, Ibis 1876, p. 327.

Eudromias geoffroyi id., Journ. für Ornith. 1873, p. 346.

Eudromias magnirostris id., *ib.* 1875, p. 182 (n.n.).

Ochthodromus geoffroyi Sharpe, Cat. Birds Brit. Mus., Vol. XXIV., p. 217, 1896; Campbell, Nests and Eggs Austr. Birds, p. 792, 1901; Carter, Emu, Vol. III., p. 176, 1904; Hall, Key Birds Austr., p. 82, 1906; Mathews, Handl. Birds Austral., p. 24, 1908; Ogilvie-Grant, Ibis 1910, p. 182.

DISTRIBUTION. Asia (north as far as China) to Australia (Europe accidental).

Adult male, in breeding-plumage. General colour above pale brown, the feathers everywhere showing black shaft-streaks, with a wash of cinnamon-rufous on the upper-back and scapulars; greater coverts brown margined and tipped with white; median coverts grey; lesser coverts dark brown fringed with white at the tips like the primary-coverts; primary-quills dark brown, inner webs fringed with white towards the base, shaft of the first primary white, the four following white only towards the tips, the remaining primaries white on the outer web and fringed with white at the tips; secondaries brown on the outer webs, fringed with white at the tip, some of the inner ones white on the outer web and pale grey on the inner one, the long innermost secondaries like the back; upper tail-coverts grey, tipped with white; middle tail-feathers dark brown fringed with white at the tips becoming paler on the outer feathers, the outermost pair being almost pure white with an obsolete spot of grey near the tip; crown of head, hind-neck, and a narrow collar round the fore-neck cinnamon-rufous, which extends more or less on to the sides of the upper-breast; lores and a line across the forehead black fringed with white; a black spot below the eye; ear-coverts dark brown streaked with white; middle of crown darker than the hind-neck and inclining to grey; forehead, throat, and the remainder of the under-surface white including the under wing-coverts, axillaries, and under tail-coverts; bill black; iris brown; tarsi light brown; feet darker brown. Total length 230 mm.; culmen 25, wing 140, tail 55, tarsus 37.

Adult female, in breeding-plumage. Similar to the male in nuptial-dress, but the characters everywhere less pronounced; the black on the lores, forehead, and under the eye being absent, the ear-coverts rufous-brown, and the middle of the crown more grey.

Adult, in winter-plumage. Differs from the breeding-plumage in the entire absence of cinnamon-rufous on the head, hind-neck, and collar on the fore-neck; also by the absence of black on the forehead, lores, and a spot below the eye; the ear-coverts grey, the forehead and a line over the eye white like the cheeks, throat, and under-surface of body.

One example, just assuming winter-plumage, still retains an indication of the cinnamon-rufous collar on the hind-neck, the band on the fore-neck is more strongly pronounced and is composed of rufous and grey feathers, the superciliary-line buff; there is no black line across the forehead, and the patch under the eye and on the ear-coverts is rufous-brown.

Nest and Eggs. Unknown.

LARGE SAND-DOTTEREL.

MR. J. P. ROGERS, writing from Derby, North-west Australia, says: "This is the commonest wader here. It is seen in large flocks up to perhaps one hundred individuals. In December, 1910, they were not so plentiful, but by February, 1911, they were most abundant. They are usually found on the beach. At Point Torment they were also common, and by the 22nd February, 1911, some began to assume their breeding dress. In April they were still common. Here one sees flocks containing many species of waders, but when disturbed the Curlew and Whimbrel go off by themselves and usually small flocks of other species will split off, but the bulk of the birds go off in one large flock. Late in the season the birds of each species seem more and more inclined to congregate only with those of their own kind, although all large flocks seemed to have several individuals of other species.

"At times these birds feed on grassy flats, but the shore or mud flats is their usual feeding ground. On one occasion I saw a small party of these birds perched on some dead mangroves at high spring tides; all the mud flats were covered right out to the edges of the grass. This is the only time I have seen this species perch."

Mr. Rogers also found it the commonest Wader on Melville Island, in November, 1911. "It is never found except on tidal salt creeks, and the sea shore. They frequent mud banks, sandy or shingle beaches. When wounded it can swim."

Swinhoe* writes: "On all the coasts of Southern Asia. Somewhat rare on Chinese coast. Common in Formosa where it stays the whole year and breeds." This statement does not appear to be correct. The eggs collected are easily seen to belong to some other bird, and have been recognised as those of the Painted Snipe.

Danford† records that he found this species plentiful near Kir-shehir in Asia Minor; they were on the point of laying."

La Touche‡ observes: "Passes Foochow in April and May, and again from the end of July to, at least, the end of September."

The bird figured and described, in full breeding-plumage, was collected at Point Torment, in North-west Australia on April 18th, 1911, by Mr. J. P. Rogers. The bird in winter-plumage was collected at the same place by the same man.

In the 2nd Supplement to the *General Synopsis of Birds*, p. 315, 1801, under the heading "Sanderling," is written: "This species is found in *New South Wales*, but not plentifully; the bill is rather shorter than in the *European*

* *Proc. Zool. Soc.* (Lond.) 1863, p. 309.

† *Ibis* 1880, p. 94.

‡ *ib.* 1892, p. 496.

THE BIRDS OF AUSTRALIA.

species. I have as yet only seen it in the adult dress, but no doubt it is subject to the same variety in its progress to that state as ours is known to be. The *English* call it at *Port Jackson*, *Sea or Shore Lark*, from its being met with in that situation; but it is known to the natives by the name of *Waddergal*. It is certain, however, that the *Ringed Plover* is found there likewise; hence it is probable, that both these birds are known indiscriminately by the name of *Sea Larks*."

This introduction of the Sanderling to the Australian Avifauna was due to the examination by Latham of the Watling Drawings, as No. 247 is marked by Latham "Sanderling Lath., Gen. Syn. Suppl. II., p. 315." In the *Hist. Coll. Brit. Mus.*, Vol. II., p. 148, Sharpe identified this drawing as that of the Sanderling, quoting Watling's note showing the source of Latham's information.

The drawing has nothing much in common with a Sanderling, but is easily recognised as referable to either *P. geoffroyi* or *C. mongolus*. The drawing is not exact enough to definitely decide which of these two, as it is of a bird in winter-plumage, but the length of the bill suggests the latter. The note about the "Ringed Plover" refers to the Watling Drawings Nos. 249 and 250, wrongly identified by Sharpe (*loc. cit.*) as *Erythrogonys cinctus*, but which are very good figures of *C. melanops* Vieillot, as I have pointed out under the first named (*ante*, p. 36).

GENUS—E U P O D A .

EUPODA Brandt, in Tchihatcheff's Voy. Sci. Altai Orient,

p. 444, 1845 Type *E. asiatica*.

MEDIUM-SIZED Plovers with long slender bills, long wings, long legs, and small feet.

The culmen is long and slender, the dertrum little swollen, much longer than the middle toe. Wing long and pointed, first primary longest. Tail short and slightly rounded. The metatarsus is very long, more than twice as long as the middle toe and about twice as long as the culmen.

Compare figures given on p. 83, *ante*.

Order CHARADRIIFORMES

Family CHARADRIIDÆ.

No. 175.

EUPODA VEREDA.

ORIENTAL DOTTEREL.

(PLATE 137.)*

CHARADRIUS VEREDUS Gould, Proc. Zool. Soc. (Lond.) 1848, p. 38; North-west Australia.
Cursorius isabellinus Horsfield (not Temm.), Trans. Linn. Soc. (Lond.), Vol. XIII., p. 187, 1821.

Charadrius veredus Gould, Proc. Zool. Soc. (Lond.) 1848, p. 38; *id.*, Birds Austr., Vol. VI., pl. 14, 1848; Seebohm, Geogr. Distr. Charadr., p. 115, 1887; Styan, Ibis 1891, p. 503; North, Birds County Cumberl., p. 110, 1898; Mathews, Nov. Zool., Vol. XVIII., p. 217, 1912.

Oreophilus veredus Reichenbach, Nat. Syst. Vögel, p. xviii., 1852.

Pluvialis xanthocheilus Bonaparte (not Wagler), Comptes Rendus Sci. (Paris), Vol. XLIII., p. 417, 1856.

Charadrius xanthocheilus Blyth (not Wagler), Ibis 1865, p. 34.

? *Cirrepidesmus asiaticus* Gould (not Pallas), Handb. Birds Austr., Vol. II., p. 229, 1865.

Charadrius asiaticus Schlegel (not Pallas), Mus. Pays-Bas, Vol. IV., Cursores, p. 38, 1865 (pars).

Ægialites veredus Swinhoe, Proc. Zool. Soc. (Lond.) 1870, p. 141; Salvadori, Ornith. Papua e Mol., Vol. III., p. 296, 1882.

Eudromias veredus Harting, Ibis 1870, p. 209, pl. vi.; Swinhoe, *ib.* 1873, p. 365; Prjevalsky, in Rowley's Miscell., Vol. II., p. 434, 1877; Ramsay, Proc. Linn. Soc. N.S.W., Vol. II., p. 197, 1878; *id.*, Tab. List Austr. Birds, p. 19, 1888.

Charadrius asiaticus Finsch (not Pallas), Ibis 1872, p. 144.

Eudromius asiaticus Legge (not Pallas), Proc. Austr. Assoc. Adv. Sci. 1892, p. 970.

Ochthodromus veredus Sharpe, Cat. Birds Brit. Mus., Vol. XXIV., p. 232, 1896; Hall, Key Birds Austr., p. 82, 1899; Campbell, Nests and Eggs Austr. Birds, p. 791, 1901; Hall, Emu, Vol. II., p. 65, 1902; Carter, *ib.*, p. 105, 1902; Hill, *ib.*, p. 166; Berney, *ib.*, p. 212, 1903; Carter, *ib.*, Vol. III., p. 175, 1904; Berney, *ib.*, Vol. IV., p. 46; Hartert, Nov. Zool. Vol. XII., p. 201, 1905; Hall, Key Birds Austr., p. 82, 1906; Berney, Emu, Vol. VI., p. 112, 1907; Ingram, Ibis 1907, p. 393; Mathews, Handl. Birds Austral., p. 24, 1908; Iredale, Emu, Vol. X., p. 7, 1910.

DISTRIBUTION. Mongolia (breeding) southwards to Australia.

* The Plate is lettered *Charadrius veredus*.



J. G. Keulemans del.

Witherby & C.

$\frac{2}{2}$

CHARADRIUS VEREDUS.

(*ORIENTAL DOTTEREL*).

ORIENTAL DOTTEREL.

Adult male. Entire back, wings, and tail olive-brown, all the feathers narrowly fringed with rufous; bastard-wing, primary coverts and quills dark brown, the latter with pale inner webs, the outer primary has a white shaft; secondaries somewhat paler than the primaries and fringed with white, the long innermost secondaries like the back; all the tail-feathers tipped with white, outer feathers much paler, the outermost pair entirely white on the outer webs; collar on the nape and eye-streak pale brown; fore-part of crown white intermixed with olive-brown; ear-coverts more or less stained with pale rufous or buff; forehead and lores pale buff; throat, buffy-white; patch below the eye, middle of the abdomen, flanks, and under tail-coverts white; fore-neck chestnut, extending on to the sides of the breast followed by a black patch on the middle of the breast, which also extends down the sides of the upper-abdomen, where the feathers are tipped with white; under wing-coverts and axillaries olive-brown, the former tipped with grey; bill black, lower base horn-colour; iris hazel; feet light flesh-colour; joints almost black. Total length 245 mm.; culmen 25, wing 170, tail 62, tarsus 49.

Adult male, in winter-plumage. Differs chiefly from the male in summer-dress by the almost entire absence of chestnut and black on the fore-neck, chest, and sides of breast.

Young female. Olive-brown above, the feathers everywhere margined with rufous which are paler and almost pure white on the median and greater wing-coverts; forehead and eyebrow white; throat whitish, more or less tinged with rufous, which is more pronounced on the fore-neck and chest; abdomen and under tail-coverts white.

Immature female. Distinguished from the adult chiefly by the absence of the chestnut on the fore-neck and the broad rufous margins to the feathers of the upper-surface; the chestnut collar on the fore-neck of the adult is here represented by a grey band with a few rufous feathers intermixed, which shows that the bird is attaining the breeding-plumage.

Nest and eggs. Unknown. Breeds in South-east Mongolia (Prjevalsky).

MR. J. P. ROGERS, writing from Derby, North-west Australia, says: "These birds are rare here, a few stray near my camp, but are very wild. I have never seen this species on the sea beach; it is always on the plains or open bush country. When at Wyndham, in 1908, I saw a large flock on the 7th of October. About 200 birds scattered over two acres, a few under each bush, at 4 o'clock p.m. The day was very warm."

Mr. Tom Carter writes: "The native name is Boolgarra-Boolgarra. This was a common summer visitor at Point Cloates, arriving very regularly about the second week in September and leaving about the middle of March. They were mostly seen feeding in flocks on the samphire salt marshes or on the open spinifex and grass flats near the beach, not often visiting the beach to feed. When heavy North-east gales of wind blew, with a parching dry heat, they would come on the beach, apparently for the sake of coolness, and would stand there motionless in long lines. On December 30th and 31st, 1895, we had a heat wave, the shade temperature being 118 degrees on those two days, and above 112 degrees for several days. Extraordinary numbers of these birds lined the beach for several miles north of Point Cloates. On the 15th of March, 1902, I noticed flocks of these birds congregated on the

THE BIRDS OF AUSTRALIA.

salt marshes near Point Cloates preparatory to migrating to their breeding-quarters. I shot several as they were in almost full breeding-plumage which I had never seen previously. All those obtained were very fat and the flocks were very shy and wild, which is quite contrary to their usual custom of letting one walk or ride within a few yards of them, when the birds remain quite motionless, apparently hoping to escape being seen, which they easily can be, as the color of their upper parts is protective."

Prjevalsky,* writing of the birds of Mongolia says: "We occasionally met with this species in South-east Mongolia, breeding on the salt plains, sometimes at great distances from water. It is very shy, even if with young; and on perceiving danger it runs a certain distance, and then suddenly stops to look back, and again begins to run. When pressed hard it takes to wing, flying very fast, but close to the ground, and very rarely for great distances."

Swinhoe† reports: "In 1863 we discovered a specimen of this bird in the East India Museum, from Java, registered by Dr. Horsfield as *Cursorius isabellinus*" (cf. *Ibis* 1865, p. 34).

Styan‡ records that it passes through the Lower Yangtze Basin in March and April.

Berney,§ writing of this bird in North Queensland, says: "A regular summer resident in large numbers, beginning to arrive during October and November, the earliest that I have seen there being 10th of the former month, but the big body of them does not show up till December, and they leave again at the end of March. Seen generally in the vicinity of water such as bore streams and the high open downs. In the course of their flight which is very rapid, sharp zig-zag turns are made simultaneously by the whole flock with a smartness and precision that are wonderful. Should you pass close to them when on the ground they stand like little statues, their heads all turned one way; they are then very hard to see, and it's the first intimation you get of their presence when they go with a rush, perhaps a hundred of them. There is no getting a shot if you are not ready, and you watch them regretfully as they race away, blaming yourself for missing a chance like that by not having a couple of cartridges in your gun. Suddenly ten more get up from the same spot, right under your elbow. You load then and carefully quartering the ground, flush three more, when using both barrels you stop one of them. It is never too late to load with these birds, for you can never feel quite sure that they are all gone. They have a strange habit—always a few of them—of standing close, very close, after the main mob have flown. When on the

* Rowley's *Miscell.*, Vol. II., p. 435, 1877.

† *Proc. Zool. Soc.* (Lond.) 1870, p. 141.

‡ *Ibis* 1891, p. 503.

§ *Emu*, Vol. II., p. 212, 1903.

ORIENTAL DOTTEREL.

wing in mobs they utter a whistle that sounds as though it was produced through a muffled pea whistle."

Further*: "Arrived 21st and 22nd September, 1902, and my last note of them in the following autumn was 10th March. On the 2nd October, 1903, their short sharp note caught my ear at day-light, and hurrying out I was in time to see three, the first of the season, flash past. Later in the day I saw sixteen more and those are the only birds I saw that summer."

Again†: "It is the most regular migrant of all the Limicoline birds that visit the Richmond district. Arriving in September or October, generally the former, they leave again in March or April, again generally the former. My earliest and latest dates are—8th September, 1904 and 5th April, 1905."

The adult male figured and described was collected by Mr. Tom Carter at Point Cloates, North-west Australia, on March 15th, 1902, and is one of the birds mentioned in his notes.

The peculiar characters of this bird can be gauged by the fact that it has been placed in no fewer than ten genera. It is to be hoped that its present disposition may be lasting.

When first met with it was recorded under the genus *Cursorius* on account of its long legs. Gould described it as a species of *Charadrius*. Reichenbach considered it an *Oreophilus*, through its long slender bill. Bonaparte placed it in *Pluvialis*. Gould then thought it might be the immature of *Cirrepidesmus asiaticus*, while Harting wrote that it was a typical *Eudromias*. That most accurate worker Salvadori, recognising that, whatever it was, it was not a *Eudromias*, classed it in *Ægialites*, while Baird, Brewer, and Ridgway pointed out that it seemed congeneric with *Podasocys montanus* (Townsend). When Seebohm lumped, he placed it in his typical section *Pluviales* along with *Oreophilus*, *Pluvialis*, *Eudromias*, *Zonibyx*, etc., and apart from the Ring- and Sand-Plovers. In the *Catalogue* of the Birds in the British Museum, Sharpe's solution was to include it in his genus *Ochthodromus*, in which association it cannot possibly be retained. I now place it in *Eupoda*, introduced for *C. asiaticus* Pallas, and from which I consider it generically inseparable. As usual, with the later-discovered forms, it has no specific synonymy to consider, the only misidentifications being its reference to *C. xanthocheilus*, which was a mere guess, and to *C. asiaticus* from which it is easily separated by means of its larger size, and wholly smoky axillaries and inner wing-coverts, these in *E. asiatica* being mainly white.

* *Emu*, Vol. IV., p. 46, 1904.

† *ib.*, Vol. VI., p. 112, 1907.

GENUS—LEUCOPOLIUS.

LEUCOPOLIUS Bonaparte, Comptes Rendus Sci. (Paris),

Vol. XLIII., p. 417, 1856 Type *L. marginatus*.

Ægialophilus Gould, Handb. Birds Austr., Vol. II.,

p. 234, 1865 Type *L. alexandrinus*.

SMALLEST Plovers, with long slender Pluvialine bills, long wings, short tails and legs, and weak feet. The bill is Pluvialine, as hereafter defined, and all black, about half the length of the tarsus and equalling the middle toe in length. The wing has the first primary longest. The tail is short and square. The legs are slender, and between the outer and middle toe, near the base, is a distinct web. There is no hind toe.

In the *Nov. Zool.*, Vol. XVIII., p. 5, 1911, I pointed out that, accepting the principle of tautonomy as determining the type of *Charadrius* Linné, that name must supersede *Ægialitis* Boie as used in the *Catalogue of Birds*.

In my "Reference List" (*Nov. Zool.*, Vol. XVIII., pp. 216-18, 1912) I lumped all the Charadriine forms under the genus-name *Charadrius*—a course which I now consider most unscientific and conducive to bad work. Upon carefully considering the birds called Sand- or Ring-Plovers or Dotterels, I find much confusion has existed as to their inter-relationships, and it has been necessary to endeavour to work out the affinities of the whole of the species mentioned in the *Catalogue* of the Birds in the British Museum.

It has also been necessary to review the opinions of previous workers, so that reconciliation of the apparently diverse views can be attempted. After the somewhat obvious separation of the Golden and Grey Plovers, the Ring-Plovers were generically named by Boie in 1822, the Golden Plovers being considered typical *Charadrius*. Brehm, *Vögel Deutschl.*, p. 544, 1831, also considered the English Dotterel as of generic value. When Quoy and Gaimard met with the New Zealand wry-billed Plover, they did not hesitate to introduce the genus *Anarhynchus* (*Voy. de "l'Astrol."*, Zool., Vol. I., 1830, p. 252) for it alone. I have noted that Brandt in 1845 proposed *Eupoda* for the *Charadrius asiaticus* of Pallas. Gray, when he examined the New Zealand Shore-Plover, also provided another genus *Thinornis* (*Voy. "Erebus" and "Terror,"* Birds, p. 11, 1845) for its reception.

LEUCOPOLIUS.

The first subdivision of the group as a whole however, was when Reichenbach (*Nat. Syst. Vögel.*, p. xviii., 1852) added *Oxyechus*, *Zonibyx*, *Ægialeus*, and *Ochthodromus*. This was followed up by Bonaparte (*Comptes Rendus Sci.* (Paris), Vol. XLIII., p. 417, 1856) further differentiating *Pluviorhynchus*, *Cirrepidesmus*, and *Leucopolius*. Gould (*Handb. Birds Austr.*, Vol. II., p. 234, 1865) then named the genus *Ægialophilus*, and the following year Coues defined *Podasocys*. Since that date the tendency has been rather to lump than to differentiate, and quite peculiar results have been produced by following up this policy.

Seebohm, in his *Geographical Distribution of the Charadriidæ*, admitted the genus *Charadrius* as being divisible into three subgenera, *Pluvialis*, *Hiaticula*, and *Ægialophilus*. The composition of the first-named I have already given, but the following two I would here note. The subgenus *Hiaticula* he further subdivided into two "subgeneric groups," "*Hiaticulæ typicæ*" and "*Hiaticulæ minores*." To the former he allotted (p. 120 *et seq.*)—

<i>C. hiaticula</i>	<i>Ægialitis</i> , Catalogue of Birds.
<i>monachus</i>	„ (<i>cucullata</i>).
<i>novæ-zelandiæ</i>	<i>Thinornis</i> .
<i>semipalmatus</i>	<i>Ægialeus</i> .
<i>vociferus</i>	<i>Oxyechus</i> .
<i>melodus</i>	<i>Ægialitis</i> .
<i>circumcinctus</i>	= <i>melodus</i> .

while the latter included (p. 131 *et seq.*)—

<i>C. minor</i>	<i>Ægialitis</i> (<i>dubia</i>).
<i>placidus</i>	„
<i>forbesi</i> .	<i>Oxyechus</i> .
<i>tricollaris</i>	„
<i>bifrontatus</i>	„
<i>jerdoni</i>	= <i>dubia</i>
<i>nigrifrons</i>	<i>Ægialitis</i> (<i>melanops</i>).

The subgenus *Ægialophilus* is also subdivided, though he wrote: "The Sand Plovers form a well-defined subgeneric group," into "Majores" and "Minores." To the former was assigned (p. 143)—

<i>C. asiaticus</i>	<i>Ochthodromus</i> , Catalogue of Birds.
<i>mongolicus</i>	„
<i>geoffroyi</i>	„
<i>bicinctus</i>	„
<i>frontalis</i>	<i>Anarhynchus</i> .
<i>obscurus</i>	<i>Ochthodromus</i> .

THE BIRDS OF AUSTRALIA.

<i>C. montanus</i>	<i>Podasocys.</i>
<i>wilsoni</i>	<i>Ochthodromus.</i>
<i>falklandicus</i>	<i>Ægialitis.</i>

while the "Minores" group contained (p. 157)—

<i>C. cantianus</i>	<i>Ægialitis</i> , Catalogue of Birds.
<i>sanctæhelenæ</i>	"
<i>pecuarius</i>	"
<i>tenellus</i>	"
<i>marginatus</i>	"
<i>dealbatus</i>	"
<i>peroni</i>	"
<i>ruficapillus</i>	"
<i>nivosus</i>	"
<i>collaris</i>	"
<i>occidentalis</i>	"

Seebohm wrote: "The form of the bill is frequently an important character, but in the genus *Charadrius* the variations are so slight that it is impossible to believe that they have any taxonomic value; they are obviously the result of pure accident, such, for example as the nature of the food and the facilities for obtaining it in the various localities where the species have been dispersed. To unite *C. geoffroyi* with *C. wilsoni* is reasonable, but at the same time to separate *C. geoffroyi* from *C. mongolicus* is a *reductio ad absurdum*, which goes far to prove that in this group of birds the slight differences in the shape of the bill are of very recent origin, and are of no value whatever in determining relationship."

Seebohm differentiated the Sand-Plovers from the Ring-Plovers by means of the coloration of the tail, and such a character would obviously lead to disaster if blindly followed in systematic work. He also used Gould's scientific name, and it is of interest in this connection to quote Gould's own diagnosis and reasons for its proposal: "In accordance with the spirit of minute subdivision which now pervades all branches of natural science, I have for a long time considered that the small Plovers hitherto comprised in the genus *Ægialitis*, of which the *Æ. hiaticula* is the type, required a further subdivision: I therefore propose the term above given for the *Æ. cantianus* of Europe, and to associate with it the *Æ. ruficapillus* of Australia. There are many other species of the form all or nearly all of which have black bills and long legs, and are less banded with black than the members of the genus *Ægialites*. They have a different note, are very nimble of foot, and affect situations bordering the open sea."

LEUCOPOLIUS.

In the *Catalogue* of the Birds in the British Museum, in addition to *Ochthodromus* and *Podasocys* as before mentioned, *Oxyechus* was used for *vociferus*, *tricoloris*, *bifrontatus*, and *forbesi*; *Ægialeus* for *semipalmatus* and *Ægialitis* for *hiaticola*, *placida*, *dubia*, *peroni*, *alexandrina*, *marginata*, *pallida*, *venusta*, *ruficapilla*, *collaris*, *nivosa*, *meloda*, *occidentalis*, *falklandica*, *pecuaria*, *sanctæ-helenæ*, *melanops*, and *cucullata*, the genera *Thinornis* for *novæ-zelandiæ* and *Anarhynchus* for *frontalis* being also admitted. It will be noted that Sharpe's *Ægialitis* covers Seebohm's "*Hiaticulæ* and his *Ægialophili minores*" very nearly, but that Seebohm's *Ægialophili majores* mostly fall into Sharpe's *Ochthodromus*.

Sharpe's diagnosis for his genus *Ægialitis* reads (p. 146):—

Tarsus long, exceeding middle toe and claw in length.

Outer toe joined to the middle one by a web as far as the second joint

Ægialeus.

Outer toe not connected with the middle one near the base

Ægialitis.

This diagnosis is incorrect.

In the American Ornithologists' Union's *Checklist*, 3rd ed., 1910, p. 128, *Oxyechus* is preserved for *vociferus* and *Ægialitis* includes *semipalmata* (*Ægialeus* being suppressed), *hiaticula*, *dubia*, *meloda*, *nivosa*, and *mongola*.

In the *Hand-List of British Birds*, *Charadrius* covers *morinellus*, *asiaticus*, *hiaticula*, *dubius*, *alexandrinus*, *vociferus*, *apricarius*, and *dominicus*. Unfortunately in this work no generic definitions are given, as it would have been interesting to read the diagnosis covering such diverse forms; and it was the impossibility (to me) of providing such, that led me to consider more carefully the nature of the bill, feet, and colouring than was necessary under a policy of lumping.

In the "Water Birds of North America" (*Mem. Mus. Comp. Zool.* (Harv.), Vol. XII.), Vol. I., 1884, p. 147, Baird, Brewer, and Ridgway diagnosed *Oxyechus*, and wrote: "Two Old World species appear to belong here rather than with the true *Ægialitis*, namely, *Charadrius tricoloris* Vieill. of South Africa and *Ch. nigrirostris* Cuvier of Australia . . . The Australian species agrees essentially with the above in size and proportions, but has broader and acuminate rectrices, and the tail is more nearly even, while the plumage is handsomer, and more varied than in any other species of the group."

One of the most striking features of *Charadrius hiaticula* Linné is the particoloured bill: many of the species associated with it in the *Catalogue of Birds* having wholly black bills, it seemed of interest to separate these into two groups, and note if the particoloured bill had any significance. It should

THE BIRDS OF AUSTRALIA.

be stated here that the preceding notes were drawn up from literature *after* I had made my own deductions from a study of the birds, and not *before*. This is noteworthy, as the study of the literature would have prepared the way for the facts I observed.

Black-billed birds—

C. vociferus.
placidus.
alexandrinus.
nivosus.
occidentalis.
collaris.
falklandicus.
marginatus.
venustus.
pallidus.
pecuarius.
sanctæhelenæ.
peroni.
ruficapillus.

Particoloured-billed birds—

C. hiaticula.
melodus.
dubius.
semipalmatus.
tricollaris.
bifrontatus.
forbesi.
cucullatus.
melanops.
novæ-zelandiæ.

If these two groups be carefully criticised as to bill-characters, first it will be seen that all the black-billed birds have longish slender bills, with long swollen dertrum almost half the length of the culmen, and that the depth of the bill at the middle of the dertrum is equal to the depth at the base; while all the birds with particoloured bills have shorter culmens, with little swollen and shorter dertrum which is noticeably less than half the length of the culmen, and the depth of the dertrum is much less than the depth of the base of the bill. The real significance of the difference in the form of the bills seems of much taxonomic import, and suggests to me different origin. I would regard the particoloured-billed birds as having been derived from a Vanelline stock while the black-billed birds have descended from a Pluvialine ancestor. When this feature is grasped many other characters can be noticed. The members of the *hiaticula* group have short thick legs and fairly strong feet, while the black-billed group have longer legs and weaker feet.

Only one member of the black-billed group is found in Australia, and to obtain the correct generic name needs more careful work. Three names are in existence for these birds—*Oxyechus*, the earliest, being given to *C. vociferus*. It needs little consideration to decide that this name is inapplicable to the little Australian *ruficapillus*. Gould provided *Ægialophilus* for the birds congeneric with this, but he had been anticipated by Bonaparte who had introduced *Leucopoliis* for *marginatus*, *pecuarius*, and *kittlitzii*. In the

LEUCOPOLIUS.

synonymy of *marginatus* appears *leucopolius*, so that the first-named must be accepted, by tautonomy, as the type. The Australian *ruficapillus* is so close to *marginatus* that the latter name was misapplied to it; consequently we must use *Leucopolius* for it and not *Ægialophilus*. Gould designated *cantianus* (= *alexandrinus*) as the type of his genus, and I am unable to separate this generically from *Leucopolius*, so that Gould's name becomes a synonym.

Now, if the coloration of these birds be criticised, it is at once seen that all the members of the black-billed group can be ranged into series and their inter-relationship seems correlated with coloration. *Charadrius vociferus* stands quite alone in size and coloration; the coloration is somewhat that of the "*hiaticula*" group, but the red rump is peculiar; the bill is moreover long, slender and Pluvialine; the legs are short but the feet are strong and the tail is long and wedge-shaped. There should be no hesitation in admitting its generic rank. Next to *hiaticula*, in the *Catalogue of Birds*, is placed the species "*placida*," but this has a long thin Pluvialine bill though similar in coloration to *C. hiaticula*. Close examination shows it to be very near *vociferus*, having the same long wedge-tail, short legs, strong feet, and Pluvialine black bill. It entirely lacks the red rump, however. The majority of the rest of the species agree in having the forehead white, black frontal band, and the back of the head red or tending to red—and also in size; the under-surface is white, with signs of banding on the breast which agrees with locality. Thus *marginatus* has a ruddy breast which in *venusta* becomes narrowed down to a red band; *pecuarius*, though with longer legs and weaker feet, has a similar ruddy flush on the under-surface; the island-form, *sanctæhelencæ*, has developed into quite a distinct form, being larger with a longer bill, and very long legs with long bare portion of the tibia, and slender feet. These are all African. The Australian *ruficapillus* is very like *marginatus* but lacks the ruddy coloration, the under-surface being pure white.

C. alexandrinus has a black spot on each side of the breast which in *nivosus* appears almost as an interrupted black band; and in *collaris* there is a distinct black band; another very distinct island-form seems to have originated from *collaris* and developed into *falklandicus*, which is larger and has two black bands across the breast, but retains the red on the back of the head. All these are American, save *alexandrinus* which spreads across the Old World in the Palæarctic Region. A species in the Moluccas which resembles *alexandrinus* is *peroni*, but this is peculiar in having a black band on the back of the neck, and also looks not unlike a miniature *mongolus*.

The Australian *C. bicinctus*, which I have placed in *Cirrepidesmus*, mimics *C. falklandicus* in having two bands, but the lower one is brownish-red not

THE BIRDS OF AUSTRALIA.

black; it has no red head, and in winter-plumage is almost indistinguishable from *C. mongolus*: hence my disposition. If Seebohm's work be now studied, it will be noted that his theories regarding the derivation of the species agree fairly with my alliances, though he drew up his ideas from a study of coloration alone, whereas mine are primarily based on the form of the bill and feet, coloration being used in a secondary manner.

My conclusions then as to the disposal of the species included in the genus *Ægialitis* in the *Catalogue* of the Birds in the British Museum, would be expressed as follows:—

Leucopoli should be used for the group called by Seebohm *Ægialophili minores* and *falklandicus* (which is placed in his *Ægialophili majores*). This is divisible into three subgeneric groups—*Leucopoli* (s. str.) for all save *falklandicus*, *pecuarius*, and *sanctæhelenæ*; *PERNETTYVA* (subgen. nov.), with *C. falklandicus* Latham as type, and *HELENÆGIALUS* (subgen. nov.), with *A. sanctæhelenæ* (Harting) as type, including *pecuarius*.

The species I would include are—

<i>Leucopoli</i> <i>marginatus marginatus</i> .	<i>Leucopoli</i> <i>collaris</i> .
„ „ <i>pallidus</i> .	„ <i>ruficapillus</i> .
„ <i>alexandrinus alexandrius</i> .	„ <i>peroni</i> .
„ „ <i>nivosus</i> .	„ (<i>Pernettyva</i>) <i>falklandicus</i> ,
„ „ <i>occidentalis</i> .	„ (<i>Helenægialus</i>) <i>sanctæhelenæ</i> .
„ <i>venustus</i> .	„ „ <i>pecuarius</i> .

I have already said that *A. placida* would be better placed in *Oxyechus*, but here again it would be better to signalise the differences by means of a subgeneric name. I therefore introduce *PAROXYECHUS* with *A. placida* Gray as type.

The names would be—

<i>Oxyechus</i> <i>vociferus</i> .
„ (<i>Paroxyechus</i>) <i>placidus</i> .

The species *Anarhynchus frontalis* Quoy et Gaimard, is so well characterised by means of its curved bill, that none but Seebohm has ever attempted to reduce it to synonymy as regards its generic rank. It would seem to have originated from a relation of *L. alexandrinus*, so that it is best mentioned here.

This group is of much interest to oologists, to whom I commend the study of the eggs. It is one of the faults of recent work that systematic ornithological workers have despised the value of the eggs, mainly because the majority of oologists are careless of the extreme accuracy that is necessary to absolutely identify their eggs. After his exposition of the little-known species of *Limicolæ*, Harting in the *Proc. Zool. Soc. (Lond.)* 1874, p. 454,

LEUCOPOLIUS.

pl. LX., figured some of the rarer eggs, and his first sentence reads: "The great assistance which may be derived in determining the natural affinities of birds by a study of comparative oology has been ably exposed by M. des Murs," but, however, did not follow up this comment with an active contribution.

A casual examination of the eggs in the British Museum emphasizes the carelessness of oologists: as there, masquerading as the eggs of "*Ochthodromus geoffroyi*," are eggs of the Painted Snipe, as previously noted. I also find that the eggs of the African Painted Snipe again appear as "*Ægialitis pallida*," while eggs determined as "*Oxyechus tricollaris*" may be quite wrongly so attached, as they very closely resemble those allotted to *A. pecuaria*. These latter seem to be accurately named, as they are of the same peculiar type as those of *A. sanctæhelenæ*—which must be right, as this is the only Plover breeding on Saint Helena. The peculiar coloration of these latter seem to confirm the accuracy of admitting the subgenus *Helencægialus*, but they further point to its being of generic value. The same abnormal style of egg characterises other forms, which will be noted under the next genus. If the eggs named "*Oxyechus tricollaris*" be correctly identified, then it cannot be classed with *Oxyechus* whose eggs are very different. The eggs of "*A. falklandica*" are quite characteristic and differ noticeably from any of the eggs of the other species of *Leucopoli*us. The eggs of the species above allotted to *Leucopoli*us all have a fairly strong resemblance, the most aberrant being those named *A. peroni* which agrees with the aberrant features of the bird. The eggs of *Anarhynchus frontalis* somewhat recall those of *L. alexandrinus*, though here again, in the British Museum, eggs of *Thinornis novæ-zelandiæ* have also been wrongly attached.

Key to the Species.

- A.* Darker and smaller *Leucopoli* *r. ruficapillus*, p. 117.
B. Paler and larger *Leucopoli* *r. tormenti*, p. 121.

장

LEUCOPOLIUS RUFICAPILLUS RUFICAPILLUS.

RED-CAPPED DOTTEREL.

CHARADRIUS RUFICAPILLUS Temminck and Laugier, Plan. Col. d'Ois., 8° livr., Vol. I., pl. 47, fig. 2, 1821; New South Wales.

Charadrius ruficapillus Temminck and Laugier, Plan. Col. d'Ois., 8° livr., Vol. I., pl. 47, fig. 2, 1821; Seebohm, Geogr. Distr. Charadr., p. 164, 1887; Buller, Birds New Zeal., 2nd ed., Vol. II., p. 5, 1888.

Charadrius marginatus Lesson, Traité d'Orn., p. 544, 1831.

Ægialitis ? canus Gould, Synops. Birds Austr., pt. iv., App., p. 6, 1838 (New South Wales).

Hiaticula ruficapilla Gray, List Spec. Birds Brit. Mus., pt. iii., p. 71, 1844; Gould, Birds Austr., Vol. VI., pl. 17, 1846; Kirk, Trans. New Zeal. Inst. 1879, Vol. XII., p. 246, 1880; Keartland, Birds Melb. Distr., p. 115, 1900.

Ægialitis ruficapillus Reichenbach, Novit. Syn. Avium., No. 2423-25, 1851; Ramsay, Proc. Linn. Soc. N.S.W., Vol. II., p. 197, 1878; *id.*, Proc. Zool. Soc. (Lond.) 1877, p. 337; *id.*, Tab. List Austr. Birds, p. 19, 1888; North, Austr. Mus. Cat., No. 12, p. 306, 1889; Legge, Austr. Assoc. Adv. Sci., Vol. IV., 1892, p. 975; Campbell, *ib.*, Vol. V., 1893, p. 436; Sharpe, Cat. Birds Brit. Mus., Vol. XXIV., p. 286, 1896; North, Birds County Cumberl., p. 111, 1898; Hall, Key Birds Austr., p. 82, 1899; Campbell, Nests and Eggs Austr. Birds, p. 794, 1901; Hall, Emu, Vol. II., p. 65, pl. vi., 1902; Berney, Emu, Vol. IV., p. 46, 1904; *id.*, *ib.*, Vol. VI., p. 112, 1907; Hall, Key Birds Austr., p. 82, 1906; Mathews, Handl. Birds Austral., p. 25, 1908; Ingram, Ibis 1908, p. 463; Littler, Handb. Birds Tasm., p. 131, 1910.

Ægialophilus ruficapillus Gould, Handb. Birds Austr., Vol. II., p. 235, 1865.

Charadrius ruficapillus ruficapillus Mathews, Nov. Zool., Vol. XVIII., p. 217, 1912.

DISTRIBUTION. Queensland, New South Wales, Victoria, Tasmania, South Australia, (New Zealand, accidental).

Adult male, in summer-plumage. Similar to the adult male of *C. r. tormenti* but darker and slightly smaller.

Adult male, in winter-plumage. Very similar to the adult male of *C. r. tormenti*.

Adult female. Very similar to the adult male.

Immature. Lacks the black on the lores, forehead, and sides of the breast. The feathers of the head and back are brown with light buff edges.

"Young in down is white underneath, and the upper parts are mottled with yellowish-brown and black" (Campbell).

THE BIRDS OF AUSTRALIA.

Nest. A depression by the shore.

Eggs. Clutch, two; ground-colour pale greenish, marked all over with dark brown to purplish-black markings and fewer ones of lavender, some of the markings being dots and lines; axis 28.5 to 32 mm., diameter 23 to 24.

Breeding-season. August to October (Mellor); October to January (Ramsay).

CAPTAIN S. A. WHITE, of South Australia, sends me the following: "There is not a beach on the coast of Australia, or the shore of an inland lake, which I have visited but I have found this bird. I do not think there is a bird living that can so well mimic the death agonies as this one, when they have a nest. They will often allow you to almost put your hand upon them in their anxiety to lure you away from their young or eggs. They lay two to three eggs on the bare shingle or sand."

Mr. Edwin Ashby found them common at Venus Bay and the Gulf of St. Vincent in February, 1910. Some nested so near the sea that the extra high waves washed the newly hatched young further up the beach.

Mr. J. W. Mellor records: "This bird is common on all the sea beaches in South Australia, and can often be seen running with sharp little strides along the edge of the water and as the waves come in they will fly a few paces out of their way and then run on again and repeat the performance; they generally go in little lots of eight or ten, and pair off in the spring, breeding in August, September and October. The eggs are placed in the shingle of sand and shells. In this situation they are hard to find as the spots on the egg are so like the little pieces of sea-shell and stones, that the eye cannot pick them out again if once taken off the spot where they lay. The clutch is two to three but more often than not the former. The birds will get off the eggs at the slightest sense of the approach of a stranger, and trust to the protective coloration to save them from detection; but the bird as a double precaution will feign a broken wing or leg and take the naturalist further away from the spot if it thinks that he is getting too near the nest. While at Stansbury in April, 1911, I saw great numbers of these birds in flocks on the open sand and mud flats when the tide was out, feeding on small aquatic insects, etc. The majority were in dull plumage, without the rufous cap, and appeared almost another species, but one could see upon securing specimens, which I did, that the rufous coloration and other markings of *ruficapilla* were there in very indistinct form as if beneath the surface; they were probably immature birds of last season's hatching, and had collected for company during the winter months; they were very fat when skinning and stuffing them. I have also met them on Kangaroo Island, Eyre Peninsula.

"The eggs were plentiful about Port Germein and Port Pirie, especially on the sandy grassed flats just back from the sea, where the birds were very

RED-CAPPED DOTTEREL.

tame, and searching about in the soft soil for insects, worms, etc. I noted that they were in pairs, and were undoubtedly breeding, and that their rufous caps were exceptionally bright, especially in the males, and I am sure that this is the case when breeding, as in March and April I have observed that they with few exceptions don a more sombre garb, and collect in larger numbers on the sea-shore, and feed about on the open sands as the tide recedes, and not inland as when breeding.

“A few were seen running along the sandy shore, bobbing their little rufous heads up and down as they picked up small insects found in the soft sand.”

Mr. Charles Belcher reports: “This species is resident in many parts of Southern Victoria, keeping principally to the neighbourhood of the sea and adjacent salt lagoons, but not being often seen on the Ocean beach itself. It never frequents inland rivers and creeks as does *melanops*. In the autumn and winter it congregates in flocks. The breeding season commences in late September and eggs may be found till November. Two only are laid. The nest is a slight hollow lined with broken bits of cockle-shell or tiny pebbles. I have found several on the banks of a salt-lake near Point Lonsdale and in other similar places along the coast. In every case the site chosen for the nest is on the crown of a slight ridge in the ground, not far from the margin of the lake or swamp.”

Mr. H. Stuart Dove writes from Tasmania: “My friend Mr. H. C. Thompson wrote me that he had found eggs of this species. On 29/12/08 he says: ‘We have discovered several nests of the Red-capped Dottrel, mostly with young; two of the nests had 2 eggs each, one had 1 egg, the remainder had young all about the one age (3 days).’

“Later on, giving further particulars, ‘a pair had their nest about 4 ft. from the esplanade path where it crosses Fenton Street on the way to the Bluff. They had two eggs and were sitting, so you may guess what a lively time they had during those days, as holiday-makers were passing along every few minutes on their way to the Bluff. Every time anyone came within 50 or 60 yards, the sitting bird would sneak off the nest and proceed by short runs between the stones to the sandy beach; as soon as all was quiet she would come back, only to be disturbed again a few minutes later. The weather was fairly warm, so I trust the eggs did not suffer. When nesting they try various dodges to draw you away from the nest. The eggs are laid in a depression among the stones, usually against a large, round, water-worn one, about 3 to 5 inches in diameter of a light grey colour, above high water-mark. A pair usually occupy a stony point such as that you find going from the mouth of the river to the Bluff. Some of the depressions had a few pieces

THE BIRDS OF AUSTRALIA.

of dry kelp in them, little fish and broken crab-shells. The bird when sitting keeps close to the large stone which is so much like her in tint that it is almost impossible to see her until she runs. The nesting is always done in the stony ground, not on the sand. In the case of a pair with one egg we could hear the young chirping quite plainly, also picking the shell; when we returned in the afternoon, the young was out in the nest but the shell had all disappeared.'"

Mr. Frank Howe found them nesting at Mud Island in Victoria in December 1909, the clutch being two.

"This species is seldom found far from the sea. They frequent the sands and open salt-water flats, and are usually met with in small troops from five to ten in number; the nest (if it may be so called) is like all others of the genus I have met with, merely a slight depression in the sand or pebbles close to high water mark; sometimes eggs are placed among debris containing broken shells and coral, etc., above the influence of the tide . . . without any protection except that afforded them by their similarity to the surrounding objects amongst which they have been deposited; they are very difficult to be detected. They breed from October to December, and sometimes as late as January."*

"This little bird seems to prefer salt water to fresh, and large flocks may be noted on the sandy beaches of St. Kilda and Brighton (Victoria). They are not easily driven from any of their favourite haunts, and have been known to lay their eggs within 100 yards of the St. Kilda jetty."†

"This species prefers the bays and inlets of the coast and adjacent salt-water marshes, although its eggs have been procured in the interior of New South Wales."‡

There is nothing much to note about the nomenclature of this species. Described and well figured by Temminck and Laugier, it was referred to by Lesson under Geoffroy's name of *C. marginatus*, but the South African bird had been previously described under that name. The only other synonym is *Ægialitis ? canus* of Gould, who, when he made his first incursion into Australian ornithology, described the female.

* Ramsay, *Proc. Zool. Soc.* (Lond.) 1877, p. 337.

† Keartland, *Birds Melb. Distr.*, p. 115, 1900.

‡ North, *Austr. Mus. Cat.*, No. 12, p. 306, 1889.



J. G. Keulemans del.

Witherby & Co

†
CHARADRIUS RUFICAPILLUS.
(RED-CAPPED DOTTEREL).

LEUCOPOLIUS RUFICAPILLUS TORMENTI.

PALE RED-CAPPED DOTTEREL.

(PLATE 138.)*

CHARADRIUS RUFICAPILLUS TORMENTI Mathews, Nov. Zool., Vol. XVIII., p. 217, 1912;
North-west Australia.

Ægialitis ruficapillus Harting, Proc. Zool. Soc. (Lond.) 1874, p. 459; Kearland, Trans.
Roy. Soc. South Austr., Vol. XXII., p. 186, 1898; Hartert, Nov. Zool., Vol. XII.,
p. 201, 1905; Ogilvie-Grant, Ibis 1910, p. 181; Carter, Emu, Vol. III., p. 176,
1904

Charadrius ruficapillus tormenti Mathews, Nov. Zool., Vol. XVIII., p. 217, 1912.

DISTRIBUTION. West and North-west Australia; Northern Territory.

Adult male, in summer-plumage. General colour above pale reddish-brown including the back, wings, scapulars, and long innermost secondaries; bastard-wing, primary-coverts and quills dark brown, the latter paler brown on the inner webs and the shafts white; secondaries grey with the basal and apical portions white, this colour increasing in extent on the inner ones; upper tail-coverts and tail darker than the back; hinder-crown, hind-neck, and sides of neck bright chestnut; a black band across the upper forehead, which is continued backward over the eye; ear-coverts black, as also a patch on the sides of the neck; forehead, cheeks, throat, and entire under-surface white, including the under wing-coverts, axillaries, and under tail-coverts; bill black, iris deep brown, tarsi and feet dull black. Total length 164 mm.; culmen 14, wing 108, tail 43, tarsus 29.

Adult female. Similar to the adult male, but everywhere duller, the black band on the upper forehead very slightly indicated, the chestnut of the head and hind-neck only faintly pronounced, ear-coverts brown instead of black, as also the patch on the sides of the neck; wing 105.

Adults in winter-plumage have no black on the forehead. A patch in front of the eye and on the side of the breast brown.

Immature. Similar to the adult in winter-plumage, but the white of the forehead not so pronounced and the feathers of the upper-surface edged with buff.

Young. Slightly darker on the upper-surface than the adult with minute dark shaft-lines and very narrow rufous edgings to the feathers; upper tail-coverts inclining to dark brown; head like the back; no black line across the upper-forehead; a dusky streak on the lores; ear-coverts like the head; forehead, throat, and under-parts generally white.

Nest. A depression by the shore.

Eggs. Similar to those of the eastern bird, but the ground-colour darker.

Breeding-season. September (Rogers), May (Carter).

* The Plate is lettered *Charadrius ruficapillus*.

THE BIRDS OF AUSTRALIA.

My collector Mr. J. P. Rogers, writing from Derby, North-west Australia, says he found them in pairs along the sandy beach in February, 1911. They spend a deal of their time along high-water mark. Usually they are on the sandy beach, but they also frequent the mud-flats at low tide. During high-water they are sometimes found on the samphire-flats. They often associate with *Pisobia ruficollis*.

Mr. Tom Carter tells me that "This species was rarely seen on the beaches near Point Cloates, but was common in mangrove swamps near the North-west Cape. A few were breeding on the flooded salt marsh at Maunds Landing thirty-five miles south of Point Cloates in May, 1900. They occur all round the South-west coast in suitable localities."

"Large numbers of these birds were found at the fresh-water swamp near Lake Way. They congregated on the sandy margin in great flocks, and ran over the moist ground with surprising rapidity in search of food, but when their wants were satisfied they again assembled in groups and remained in one position for over an hour if undisturbed."*

The male and female described and figured were collected at Lake Way, West Australia, by Mr. F. Lawson Whitlock, in July, 1909.

* Keartland, *Trans. Roy. Soc. S. Austr.*, Vol. XXII., p. 186, 1898.

GENUS—CHARADRIUS.

CHARADRIUS Linné, Syst. Nat., 10th ed., p. 150, 1758 Type *C. hiaticula*.

Also spelt—

Charadrias Scopoli, Introd. Hist. Nat., p. 475, 1777.

Charadrias Lacepède, Tabl. Ois., p. 19, 1799.

Ægialitis Boie, Isis 1822, p. 558 Type *C. hiaticula*.

Also spelt—

Ægialites Kaup, Skizz Entwick-Gesch. Nat. Syst., p. 194, 1829.

Ægialeus Reichenbach, Nat. Syst. Vögel, p. xviii. .. Type *C. semipalmatus*.

Also spelt—

Ægialus "Bonaparte," Gray, Handl. Gen. Spec. Birds, pt. III., p. 16, 1871.

Hiaticula G. R. Gray, List. Gen. Birds, p. 65, 1840 .. Type *C. hiaticula*.

SMALL Plovers with short Vanelline bills, long wings, short tails and legs, and strong feet. The bill is Vanelline, as previously defined, and is much shorter than the tarsus and also than the middle toe; it is particoloured in the adult, the tip being black, the base pale flesh. The wing is long with the first primary longest. The tail is short and square and less than half the length of the wing. The tarsus is short and thick and covered with hexagonal scales. The toes are long, the outer being connected with the middle one by a web near the base. No hind toe.

Under the preceding genus I have discussed the black-billed species included in *Ægialitis* in the *Catalogue of Birds*, and here propose to criticise the particoloured-billed forms.

Ægialitis hiaticula was included by Gould in his *Handb. Birds Austr.*, Vol. II., p. 231, 1865, where he wrote: "I possess an undoubted Australian specimen of this common European species . . . The specimen above alluded to was killed at Port Stevens . . ." The comment upon this in the *Cat. Birds Brit. Mus.*, Vol. XXIV., p. 261, footnote, reads, "L⁴ Ad. SK. Port Stevens, New South Wales.* Gould Coll." "* This specimen is the authority for including the species in the Australian avifauna. A specimen of *Leptorodius gularis* of Africa was also described by Gould as *Herodias pannosa* from 'Port Stevens.' I have no doubt that the locality is erroneous in both cases."

THE BIRDS OF AUSTRALIA.

As no further instances have been recorded, and as it was a most unlikely bird to occur in Australia, I omitted it from my "Reference List" (*Nov. Zool.*, Vol. XVIII., p. 217, 1912), and here note its inadmissibility on Gould's specimen alone.

I have shown that the genus-name to be used for the Ring-Plovers is *Charadrius*, of which *C. hiaticula* is the type. This species has a short somewhat conical bill with a slightly swollen dertrum; short thick legs and strong feet; the bill has the tip black but the major portion pale-coloured. Species which agree in having the same bill-characters, which I call Vanelline, are *dubius*, *semipalmatus*, *melodus*, *cucullatus*, *melanops*, *bifrontatus*, *tricollaris*, *forbesi*, and *novæ-zelandiæ*. In the *Cat. Birds Brit. Mus.* the last-named was admitted to be generically distinct under the name *Thinornis*, and the species *semipalmatus* was also separated as *Ægialeus*, while *bifrontatus*, *tricollaris*, and *forbesi* were classed in *Oxyechus*, the remaining five being placed in *Ægialitis* along with many others I have shown to be more correctly placed in *Leucopoliis*. The three species *bifrontatus*, *forbesi*, and *tricollaris*, are marked off from the others on account of the double banding on the breast, the long wedge-tail, and longer tarsi and feet.

The species *cucullatus* is also peculiar in its black head and throat, while *melanops* is noteworthy in its small size, its longer bill, slender legs and feet, variegated coloration above with dark maroon scapulars.

The interrelationships of the species seem to be much as Seebohm suggested; the ancestor of *hiaticula* seems to have gone as far south in Australia and New Zealand as was possible, and then through isolation to have become quickly modified in the former country into *cucullatus*, in the latter into *novæ-zelandiæ*. Probably the ancestor of *dubius* also accompanied that of *hiaticula* into Australia, where it became differentiated into *melanops*, but no form like this appears to have penetrated into New Zealand. American ornithologists do not now recognise *C. semipalmatus* as generically separable from *C. hiaticula*, but in my opinion it is quite worthy of subgeneric distinction.

The South African species *bifrontatus*, etc., which Baird, Brewer, and Ridgway considered referable to *Oxyechus* and which Sharpe placed in that genus, I would associate with *Charadrius* on account of the Vanelline bill, and quite set apart from *Oxyechus* which has a Pluvialine bill.

On account of the characteristics of these species noted above, I would consider them generically separable from *Charadrius hiaticula* and propose for them the new generic name *AFROXYECHUS* with *C. tricollaris* Vieillot as type. This is the only possible course, as I consider that the bill in *Oxyechus* is Pluvialine whereas in *Afroxyechus* it is Vanelline—to me an essential difference.

CHARADRIUS.

The Australian *C. melanops* also merits generic distinction from *C. hiaticula* as its bill, though Vanelline, is long and slender; the exact antithesis of the bill of *Ægialeus*. In addition to a distinct style of coloration, the tail is proportionately long. I am introducing the new generic name *ELSEYA* for this species: type *C. melanops* Vieillot.

The Australian *C. cucullatus* can remain in the typical subgenus of *Charadrius*: it has only differed in producing a black head and throat, and increased slightly in size with a rather longer bill. This last is of interest as the New Zealand genus *Thinornis* was differentiated at a very early date on account of its long bill, which however is Vanelline in character.

It might be here noted that the more correct word to use in connection with the bill-characters seen in *Charadrius hiaticula* would be "Charadriine," but inasmuch as the genus-name *Charadrius* has been more commonly associated with the species of *Pluvialis*, it might induce confusion; it is considered that the use of the contrasting terms "Pluvialine" and "Vanelline" will be more readily accepted, the former meaning having the characters seen in *Pluvialis apricarius* (Linné) (= *Charadrius pluvialis* Auct.) the latter having the characters seen in *Vanellus vanellus* (Linné).

My examination of the eggs in the British Museum allotted to the species here dealt with, favour the conclusion I have put forward with regard to eggs of *Leucopoliis*, viz. that accurately-determined eggs will prove serviceable to the systematic ornithologist, but that great care must be taken at the present time owing to the carelessness of the past generations of oologists; and no deductions can be safely attempted until perfectly reliable eggs are studied. Thus, if the eggs of "*Oxyechus tricollaris*" be correctly identified, there can be no hesitation in accepting my new genus *Afroxyechus*, as they entirely differ from eggs of *Oxyechus*. Again, the eggs of "*A. melanops*" are so markedly different from those of "*A. cucullatus*"—which closely resemble those of *C. hiaticula*—that the necessity of my new genus *Elseya* must appeal to all oologists. The eggs of *Thinornis novæ-zelandiæ*, however, resemble the latter, so that we have another means of descent to that proposed by Seebohm—viz. that the ancestor of this species was a closer relation of the ancestor of "*melanops*" than of "*cucullata*," and that it has grown larger since it settled in New Zealand. This course would be parallel to its companion *Anarhynchus frontalis*, as this bird seems to have a close alliance with *L. alexandrinus* and is also larger.

The eggs of the other species here allotted to *Charadrius* have all a general resemblance. The most peculiar result of this examination of these eggs is, that while the general Charadriene (meaning similar to the eggs of *Charadrius hiaticula*) appearance is traceable through the majority of the Sand- and

THE BIRDS OF AUSTRALIA.

Ring-Plovers, a quite different type of egg is observed which seems to reappear in Africa, Australia and New Zealand, and is seen in the eggs of *L.* (*Helenægialus*) *pecuarius* and *sanctæhelenæ*, ?*Afroxyechus tricollaris*, *Elseya melanops*, and *Thinornis novæ-zelandiæ*. Whether these are interrelated is a problem yet to be solved: superficially they do not seem to be, while they all obviously differ from *Charadrius*. In any case, the need of careful study of eggs cannot fail to be impressed upon anyone who examines a series of them in conjunction with critical comparison of birds. The constant recurrence of the typical form of egg seems to have prejudiced most systematists who have casually glanced at long series of the eggs of birds in a large genus, and hence their recent neglect.

Key to the Species.

- A. Smaller and larger *Charadrius c. cucullatus*, p. 128.
B. Darker and lighter *Charadrius c. tregellasi*, p. 133.

CHARADRIUS CUCULLATUS CUCULLATUS.

HOODED DOTTEREL.

(PLATE 139.)

CHARADRIUS CUCULLATUS Vieillot, Nouv. Dict. d'Hist. Nat., Vol. XXVII., p. 136, 1818 ;
New South Wales.

Charadrius cucullatus Vieillot, Nouv. Dict. d'Hist. Nat., Vol. XXVII., p. 136, 1818.

Charadrius monachus Wagler, Syst. Av., Charad., p. 60, sp. 15, 1827 (New South Wales) ;
Seebohm, Geogr. Distr. Charad., p. 127, pl. 5, 1887.

Ægialitis monachus Gould, Synops. Birds Austr., pt. II., pl. 32, 1837 ; *id.*, Handb. Birds
Austr., Vol. II., p. 231, 1865 ; Legge, Pap. and Proc. Roy. Soc. Tasm. 1874, p. 34,
1875 ; Ramsay, Proc. Linn. Soc. N.S.W., Vol. II., p. 197, 1878 ; *id.*, *ib.*, Vol. VII.,
p. 57, 1882 ; *id.*, Tab. List Austr. Birds, p. 19, 1888 ; Legge, Pap. and Proc. Roy.
Soc. Tasm. 1887, p. 94, 1888 ; North, Austr. Mus. Cat., No. 12, p. 304, 1889 ;
Legge, Austr. Assoc. Adv. Sci., Vol. IV., p. 974, 1892 ; Campbell, *ib.*, Vol. V.,
p. 434, 1893.

Hiaticula monacha Gray, List. Spec. Brit. Mus., pt. III., p. 70, 1844 ; Gould, Birds Austr.,
Vol. VI., pl. 18, 1848.

Hiaticula cucullata Lichtenstein, Nomencl. Av. Mus. Zool. Berol., p. 94, 1854.

Ægialitis cucullatus Sharpe, Cat. Birds. Brit. Mus., Vol. XXIV., p. 302, 1896 ; North,
Birds County Cumberl., p. 110, 1898 ; Hall, Key Birds Austr., p. 83, 1899 ;
Campbell, Nests and Eggs Austr. Birds, p. 797, 1901 ; *id.*, Emu, Vol. II.,
p. 209, 1903 ; Berney, *ib.*, p. 212 ; MacLaine, *ib.*, Vol. III., p. 64, 1903 ; Hall,
Key Birds Austr., p. 83, 1906 ; Mathews, Handl. Birds Austral., p. 25, 1908 ;
Littler, Handb. Birds Tasm., p. 133, 1910.

Charadrius cucullatus cucullatus Mathews, Nov. Zool., Vol. XVIII., p. 218, 1912.

DISTRIBUTION. Queensland, New South Wales, Victoria, Tasmania, South Australia.

Adult male. Back, wing-coverts, scapulars, and long innermost secondaries ashy-grey ;
outer edge of wing white ; bastard-wing brown ; small coverts near the edge of the
wing and primary-coverts brown tipped with white, the four outer primary-quills
dark brown, the remainder white tipped with brown ; secondaries similar in colour,
some of the inner ones entirely white ; head and throat black as also a collar on the
upper-mantle which joins the black of the throat on the sides of the neck ; a black
patch on the sides of the breast, the feathers of which have white tips ; a collar
on the hind-neck and the entire under-surface pure white, including the axillaries ;
bill yellowish-red, tip black ; iris hazel, eyelids scarlet ; tarsi and feet flesh-pink.
Total length 215 mm. ; culmen 17, wing 145, tail 66, tarsus 27.



J. G. Keulemans del

W.therby & Co

PLATE
CHARADRIUS CUCULLATUS.
(HOODED DOTTEREL.)

HOODED DOTTEREL.

Adult female. Similar to the adult male but smaller.

Gould, *Handb. Birds Austr.*, Vol. II., p. 232, wrote : " The female differs from the male in having the crown mottled with black and white, the face and throat white, and in having only a narrow line of black at the base of the neck behind ; " and Sharpe, in *Cat. Birds Brit. Mus.*, Vol. XXIV., p. 302, wrote : " Similar to the male in colour," and then quoted Gould's statement, but without comment.

Littler, *Handb. Birds Tasm.*, p. 133, wrote : " Female—Resembles the male save that the head is mottled with white."

I find the male and female to be alike in coloration.

Immature. Differs from the adult in the entire absence of black on the head and throat, the former being greyish-brown while the latter, as also the forehead, is white ; the black of the upper-surface, in the adult, is here indicated by dark brown feathers ; the dark patch on the sides of the breast, much the same as in the adult ; secondaries white with broad subterminal band of brown ; throat pure white ; brown patch on the side of the breast.

Nestling. Upper-surface pale buff, vermiculated with dark brown ; tail black ; forehead more sparsely marked than the back ; a black nuchal band ; cheeks, chin, throat, and entire under-surface white, including the under tail-coverts and the under-wing-coverts ; a spot of black on each side of the lower-throat.

Nest. A depression in the ground.

Eggs. Clutch, two or three ; ground-colour pale stone, marked all over, but more at the larger end, with purplish-black and lavender spots ; axis 39 to 39.5 mm., diameter 26.5 to 27.

Breeding-season. September to November (North) ; October to January (Belcher).

CAPTAIN S. A. WHITE collected this species in Kangaroo Island in December, 1911, and Mr. Edwin Ashby found it common there in October, 1905, when it had evidently been nesting. He also found it common along the seashore of Yorke Peninsula, South Australia.

Mr. J. W. Mellor sends me the following : " These birds frequent the sandy sea-shores only, and may be seen running along at the edge of the advancing tide in little flocks of six or eight, or in pairs. The surf will often catch them, but they fly before it gets far up their legs, and settle again a short way up the beach. Should you want to get near them and follow up the shore, they will run along the sandy beach with quick sharp runs, keeping ahead of the pursuer walking at a brisk pace. They breed on the sand shingle just above the tide mark, using a little sea-weed or some shingly stones and shells to surround the place where the eggs are laid, and like the other dottrels the locating of the eggs is an effective deception to the eyesight ; the clutches are two or three eggs. I have seen the birds on Kangaroo Island where they breed, also on Eyre's and Yorke's Peninsulas, South Australia. I saw them frequently on the islands of Bass Straits. Victoria is also a good breeding locality, on some of the long stretches of sea beach to be found there."

THE BIRDS OF AUSTRALIA.

Mr. Charles Belcher writes: "So far as I am aware the Hooded Dottrel is never seen in Victoria except on the Ocean beach, and never in greater numbers than four or five together. Still, it is well distributed wherever there are sandy stretches of beach from Port Phillip to Cape Otway. The nest is built some distance above high water mark, and is a mere hollow in the sand, lined perhaps with a few bits of broken shell. It may sometimes be discovered by following the birds footprints. Generally, two eggs are laid, sometimes three, and the breeding season is from October to January, being considerably later than that of either of the other resident species of *ægialitis*. On the islands of Bass Straits, particularly the Furneaux group, this bird is much more plentiful than it is on the mainland beaches. In November, 1901, we found it numerous on every one of over twenty islands we visited."

The bird figured is a male, and was collected in New South Wales in September, 1876.

This bird was known by Wagler's name of *C. monachus* for seventy years, when Sharpe revived for it Vieillot's prior name of *C. cucullatus*, since which time it has been generally known by the latter name. It is somewhat noticeable to see that the majority of authors working on the species noted that Vieillot's name was applicable—but none save Lichtenstein made use of it.

The early history of this species is interesting as, though it appears to have been met with by the very earliest *voyageurs* in Tasmania, through an extraordinary mistake it escaped recognisable description for forty years.

One of the hitherto indeterminable puzzles in connection with the *Charadriiformes* is that of *Charadrius rubricollis* Gmelin. In the *Syst. Nat.*, p. 687, 1789, this is thus described:—

Ch. supra cinereus, subtus albus, rostro pedibusque incarnatis, cauda remigibusque obscuris, capite colloque nigris, macula utrinque ad collum magna quadrata badia.

Red-necked Plover, Lath. syn. III., 1, p. 212, n. 19.

Habitat in terra van Diemen, tringae cincli magnitudine.

Rostrum apice nigrum; irides aurantiae; alis spuriis candor intermixtus.

This is simply a Latin translation of Latham's account which reads:—

Red-necked Plover. Size of the *Purre*. The bill flesh-coloured: the end black: irides orange: head and neck black; on each side of the neck a large square chestnut spot, the size of a silver penny, almost meeting together at the back part; the upper part of the plumage ash-colour; with a little mixture of white about the bastard wing; the breast and under parts white; quills and tail dusky; legs flesh colour.

Inhabits the South Seas. Found in Adventure Bay, Van Diemen's Land.

Such a detailed description merited recognition, but though well studied it was found inapplicable to every Australian species, and no previous worker had been able to fix it on any extra-limital form.

HOODED DOTTEREL.

To me it somewhat recalled *C. cucullatus*, but of course the red spot is fatal to that identification: Gray (for instance) suggested *C. melanops* on account of the red spot.

I obtained a clue by means of the exact locality given: students of Australian ornithology would recognise it as the place of call of Cook's vessels on the Third Voyage. The artist who painted the birds on that Voyage was W. Ellis, and these drawings are preserved in the British Museum (Natural History).

When Sharpe worked through the Ellis Drawings in the *History of the Collections Nat. Hist. Brit. Mus.*, Vol. II., p. 205, he identified: "Pl. 67" as *Ægialitis cucullatus* (Vieill.): "Adventure Bay. W. Ellis, ad vivum 1777." This at once suggested reference to this plate as having some connection, but it was found to be a most accurate painting of *C. cucullatus* with no erroneous detail such as would cause Latham's faulty description. Looking through the rest of the Ellis Drawings, however, the puzzle was solved.

Plate No. 63 is a beautiful painting of the Red-necked Phalarope, and it is now certain that Latham's description was drawn up from a study of these Ellis Drawings, and that in some inexplicable manner his notes concerning the Red-necked Phalarope and the Hooded Dotterel were confused and resulted in the description of his "Red-necked Plover." The words, "and each side of the neck a large square chestnut spot, the size of a silver penny, almost meeting together at the back part," with "a little mixture of white about the bastard wing," belong solely to the former, while the other words refer exactly to the latter. How the mistake was made by Latham cannot now be understood, but it seems reasonable to suggest that he had only a short time for consultation and his notes became mixed. In the *Gen. Hist. Birds*, Vol. IX., p. 341, 1824, Latham again gave the description above detailed of his Red-necked Plover, but the only locality there noted is, "Found in Adventure Bay, Van Diemen's Land"; but a note is then added, "I observe one answering to this description among the drawings of Mr. Dent, but the spot on the sides of the neck, just below the nape, is white, instead of chestnut; the side tail-feathers with a bar of black near the end. This may possibly differ from the other in sex, if at all allied, which, however, is by no means certain, the drawing not being accompanied with any account." This latter description agrees exactly with the Hooded Dotterel and it may be that the drawing in the possession of Mr. Dent, whoever he was, was one made by the artists accompanying Flinders, for this species was procured by Robert Brown on the south coast of Australia, "prope Bay X," in 1801-2. He carefully described it in manuscript and later presented it to the British Museum by whose Keeper it was acknowledged as received in 1818, the year

THE BIRDS OF AUSTRALIA.

it was described by Vieillot from a specimen probably procured by Flinders's contemporary Baudin.

The specimen preserved by Robert Brown still exists in the British Museum.

It will thus be seen that, though met with by Ellis in 1777 and by Brown in 1801-2, it was not described until 1818 and then by the French ornithologist Vieillot. This seems most peculiar, as it is such a distinct species.

The most interesting feature of this species is its peculiar tendency to melanism, and we would seem to see here an alteration, in a species already fixed, towards a black form.

Thus the young of this species is very similar in coloration to that of *C. hiaticula*, having the grey upper-coloration and pure white under-coloration of that species. The adult however has the whole of the head and throat black, whereas the species *C. hiaticula* has a white forehead and throat, a black band across the top of the head, and the rest of the head grey. A comparison at once suggests descent of *C. cucullatus* from an ancestor of *C. hiaticula*, and that the black head and throat has been produced through isolation in the southern parts of Australia. It is rare however that we see the melanistic tendency in progress, but my examples show that the forces which apparently fixed the black head and throat are still at work, and that this species will later have the whole of the back black as well.

Moreover though this melanistic tendency is most marked in Western examples it is also sometimes seen in Eastern specimens.

Thus in most birds from the West the feathers of the back are mixed with odd black ones; sometimes the scapulars are all black; also the upper wing-coverts show odd black feathers; in the specimen from Torbay, hereafter noted, the upper-back is wholly black, the middle-back is black with some brown (not grey) feathers mixed, the lower-back is almost wholly black, the scapulars are brown-and-black, while the upper wing-coverts and tertials are showing black fringes.

Order CHARADRIIFORMES

Family CHARADRIIDÆ.

No. 179.

CHARADRIUS CUCULLATUS TREGELLASI.

WESTERN HOODED DOTTEREL.

CHARADRIUS CUCULLATUS TREGELLASI Mathews, Nov. Zool., Vol. XVIII., p. 218, 1912 ;
South-west Australia.

Ægialitis cucullata Milligan, Emu, Vol. II., p. 76, 1902 ; Ogilvie-Grant, Ibis 1910, p. 181.

Charadrius cucullatus tregellasi Mathews, Nov. Zool., Vol. XVIII., p. 218, 1912.

Charadrius cucullatus torbayi id., Austral Av. Rec., Vol. I., p. 30, 1912.

DISTRIBUTION. South-west Australia.

Adult male. Differs from *C. c. cucullatus* in being darker and larger, and in having less black on the second outer tail-feather.

Female. Similar to the male.

Immature. Similar to the young of the Eastern form.

Melanistic form (C. c. torbayi). Head and throat black ; a white collar on the nape ; entire back and upper tail-coverts black like some of the wing-coverts ; primaries black, with a large white patch on the inner web ; rest of under-surface white including the under wing- and tail-coverts.

Nest. A depression in the ground.

Eggs. Clutch, three ; very similar to those laid by the Eastern bird but of a darker ground-colour.

Breeding-season. September, October.

MR. TOM CARTER says he never observed this bird in the North-west, but odd birds have been seen at several places on the South-west coast between Margaret River and Albany.

“On my first trip, I shot several of these birds, which, comparatively speaking, were numerous. Whilst searching for the small ‘cowries’ in the line of shells above high-water mark, my companion discovered three eggs placed in a depression on the beach. On my second trip I discovered, on the beach at Ellensbrook, two young ones concealed in a depression in the sand impressed by a cow’s foot. The parents had previously adopted the characteristic ruse of feigning to be grievously wounded. I subsequently

THE BIRDS OF AUSTRALIA.

found what probably was the nest, if it can be so called, with an addled egg. The egg was placed in a similar depression but surrounded with numbers of broken sea-shells, which evidently had been collected.”*

The type described was collected at Ellensbrook, South-west Australia, in October, 1901.

The type of *C. c. torbayi* (see *ante*) has the entire back, from the white nuchal collar to the tail *black*, as also the scapular-feathers.

* Milligan, *Emu*, Vol. II., p. 76, 1902.

GENUS—ELSEYA.

SMALLEST Plovers with long Vanelline bills, long wings, and long tail; slender legs and feet.

The bill is very long for the Vanelline-billed group of Ring-Plovers, being only exceeded by that of the genus *Thinornis*: it is almost as long as the tarsus and exceeds the middle toe. The wing is long with the first primary longest. The tail is long and rounded, about half the length of the wing. The tarsus is short and slender; the scaling is indistinct and shows a strong tendency to fusion: it does not show the regular hexagonal scaling of *Charadrius*. The toes are long and slender and the outer one is connected with the middle one by a web near the base. No hind toe.

Key to the Species.

- | | | | | | | |
|-----------|-------------------|----|----|----|----|-------------------------------------|
| <i>A.</i> | Darker and larger | .. | .. | .. | .. | <i>Elseya m. melanops</i> , p. 137. |
| <i>B.</i> | Paler and smaller | .. | .. | .. | .. | <i>Elseya m. russata</i> , p. 141. |



Witherby & Co

H Grönvold del

2
10

CHARADRIUS MELANOPS.
(BLACK-FRONTED DOTTEREL).

ELSEYA MELANOPS MELANOPS.

BLACK-FRONTED DOTTEREL.

(PLATE 140.)*

CHARADRIUS MELANOPS Vieillot, Nouv. Dict. d'Hist. Nat., Vol. XXVII., p. 139, 1818;
New South Wales.

Charadrius melanops Vieillot, Nouv. Dict. d'Hist. Nat., Vol. XXVII., p. 139, 1818; *id.*,
Galer. des Ois., Vol. II., p. 98, pl. 235, 1825.

Charadrius nigrifrons Temminck and Laugier, Plan. Col. d'Ois., 8^e livr., Vol. I., pl. 47,
fig. 1, 1821 (New South Wales); Seebohm, Geogr. Distr. Charadr., p. 138, 1887.

Ægialitis nigrifrons Boie, Isis 1826, p. 978; Gould, Synops. Birds Austr., pl. 32, 1837;
id., Handb. Birds Austr., Vol. II., p. 232, 1865; Harting, Proc. Zool. Soc. (Lond.)
1874, p. 459, pl. LX.; Ramsay, Proc. Linn. Soc. N.S.W., Vol. II., p. 197, 1878;
id., Proc. Zool. Soc. (Lond.) 1877, p. 336; Hume, Stray Feathers, Vol. VII.,
p. 438, 1878; Ramsay, Tabl. List. Austr. Birds, p. 19, 1888; North, Austr. Mus.
Cat., No. 12, p. 304, 1889; Cox and Hamilton, Proc. Linn. Soc. N.S.W., 2nd ser.,
Vol. IV., p. 419, 1889; Legge, Austr. Assoc. Adv. Sci., Vol. IV., p. 974, 1892;
Campbell, *ib.*, Vol. V., p. 435, 1893; North, Report Horn. Sci. Exp., pt. II.,
p. 104, 1896; Kearland, Birds Melb. Distr., p. 115, 1900; Campbell, Emu,
Vol. VII., p. 157, 1908.

Hiaticula nigrifrons Gray, List Spec. Birds Brit. Mus., pt. III., p. 71, 1844; Gould, Birds
Austr., Vol. VI., pl. 20, 1845; Sturt, Narr. Exp. Centr. Austr., Vol. II., App., p. 49,
1849.

Ægialitis melanops Sharpe, Cat. Birds Brit. Mus., Vol. XXIV., p. 300, 1896; North, Birds
County Cumberl., p. 110, 1898; Hall, Key Birds Austr., p. 83, 1899; Campbell,
Nests and Eggs Austr. Birds, p. 795, 1901; Berney, Emu, Vol. II., p. 212, 1903;
French, *ib.*, Vol. III., p. 110, 1903; Berney, *ib.*, Vol. IV., p. 47, 1904; Hall, Key
Birds Austr., p. 83, 1906; Berney, Emu, Vol. VI., p. 112, 1907; Mathews, Handl.
Birds Austral., p. 25, 1908; Campbell, Emu, Vol. VIII., p. 216, 1909; Littler,
Handb. Birds Tasm., p. 132, 1912; Hall, Emu, Vol. XI., p. 210, 1912.

Erythrogonys cinctus (not Gould) Sharpe, Hist. Coll. Brit. Mus., Birds, p. 148, 1906.

Charadrius melanops melanops Mathews, Nov. Zool., Vol. XVIII., p. 218, 1912.

DISTRIBUTION. Queensland, New South Wales, Victoria, Tasmania, South Australia.

* The Plate is lettered *Charadrius melanops*.

THE BIRDS OF AUSTRALIA.

Adult male. Forehead, middle of crown, lores, a line below the eye, ear-coverts, hind-neck, sides of neck and a broad band across the fore-neck deep black; a line over the eye along the sides of the crown and nape white like the throat, sides of the breast, abdomen, and axillaries; crown of head, back, long scapulars, and long innermost secondaries greyish-brown; short scapulars maroon-chestnut; lesser wing-coverts brown; median-coverts greyish-brown with dark shaft lines, greater coverts also greyish-brown broadly tipped with white forming a wing-bar; a portion of the outer edge of the wing white; bastard-wing and primary-coverts black; primary-quills very dark brown; secondaries white at base, apical portion dark brown, some of the inner ones almost entirely white; upper tail-coverts rufous with dark shaft-lines; middle tail-feathers dark brown, outer pair white, next pair with a brown spot on the inner web near the tip, the remainder brown tipped with white; under tail-coverts white, the lateral ones with a black spot on the outer web; under wing-coverts white, the small marginal coverts brown edged with white; quills below dark brown; bill red, black at tip; iris brown, eyelids scarlet; feet red. Total length 165 mm.; culmen 15, wing 110, tail 53, tarsus 25.

Adult female. Similar to the adult male but slightly smaller.

Immature. Forehead white with dusky tips; collar black and the frontal band faintly indicated; back uniform brown, the upper tail-coverts with lighter tips; upper-wing-coverts with rufous tips.

Nestling. "Upper-surface grey dappled with black, a white collar on the nape; under surface white" (Campbell).

Nest. A depression in the earth.

Eggs. Clutch, three; ground-colour stone, covered with strange markings of lavender and brown, patches of the ground-colour frequently appearing; axis 29-30 mm., diameter 21-21.5.

Breeding-season. May (French, Victoria); April, September (Berney, Queensland); September to December (Belcher).

MR. CHARLES BELCHER writes: "This is a resident species in Victoria, and as rare near the sea coast as its Red-capped congener is common; but inland it enjoys a monopoly of the shingly banks of rivers and lagoons. It is commonest in Victoria to the north of the dividing range, and particularly in the Goulburn and Murray Valleys. It does not congregate in flocks; indeed I do not recollect having ever seen more than half a dozen together. The eggs which are three in number, are exceedingly difficult to find: as in the case of the Red-capped species detection is avoided by aid of protective coloration and the nest is placed in a much greater variety of sites. The breeding season extends from September to December. I have known fresh eggs taken [at Aivy's Inlet] as late as December 26th. Practically every inland water in Victoria is frequented by one or more pairs of these birds. I have seen them on the muddy banks of the Yarra not far above Princes Bridge, and often meet with them when driving along up country roads not in the immediate vicinity of water."

BLACK-FRONTED DOTTEREL.

Captain S. A. White writes: "I think these birds are more plentiful in South Australia than in any other state I have visited. They prefer the shores of lakes, dams, and waterholes, even the banks of rivers, to the sea coast. In years gone by they bred regularly at the Reedbeds and I have often found their eggs, which were deposited on the bare sand."

Mr. J. W. Mellor sends me the following account from South Australia: "This bird does not go in flocks, and is generally seen in pairs or singly; usually it delights to frequent the mud swamps of where fresh water rivers overflow, where it runs with great rapidity along the edge of the water, feeding on small insects both aquatic and those on the land. Its peculiar action of bobbing its head down and tail up and vice versa is characteristic of the species, making a plaintive little note like 'chick chick' the while, and when frightened it will fly off making a loud harsh note uttered in a sharp frightened fashion; its note is often heard at night, especially if it be moonlight, as it is also nocturnal, and often as I have been waiting on the swamp edge, the little bird has flown past my gun barrel and settled quite close to me, uttering its little plaintive note of 'chick, chick.' The eggs are generally three to a clutch, and can always be detected from any other dottrel's eggs by the thin shell and the finely-sprinkled spots all over the surface; they are laid just above high-water mark in the sand or earth near fresh-water swamps; they are very hard indeed to get, owing to the birds leaving them directly danger approaches, and the eggs being near short grass and finely spotted, they are exactly the same as the surrounding patch. The birds will nearly always feign a broken wing or leg, and carry on in a remarkable manner if you are too near the nest, falling down as if they had been shot to pieces, and letting the intruder get almost within a distance of capturing them, when they pull themselves together in a moment, and fly a few yards away only, and repeat the performance until you are quite away from their breeding spot. I have seen them at the Reedbeds, South Australia, where the River Torrens empties itself and swamps the land, also on the River Murray, South Australia, and in the Lakes Alexandrina and Albert district, also far inland and where they can find a pool of water sufficiently large to keep them going in food and drink."

"This species is not uncommon on the Herbert River (Queensland) and is found dispersed over the whole of the eastern and southern portions of Australia, even venturing far inland. I have met with it high up on the Bogan and Bell Rivers and on the Murrumbidgee River near Yass; it gives preference to the margins of inland lakes and lagoons, rather than the sea coast . . . There was always a difficulty in discovering the eggs, from their similarity to the adjacent ground on which they were laid, it being necessary

THE BIRDS OF AUSTRALIA.

to watch the birds to their eggs . . . The eggs are always four in number and usually placed in a slight depression in the sand or pebbles near water.”*

“Eggs taken from October 1st to November 19th (Mudgee). Young seen October 30th and on to December. They occasionally, as if for amusement, take lofty flights, wheeling about for some time and then descending to the earth like stones.”†

“This species is practically a permanent resident, though their numbers vary from time to time very largely and apparently without much reference to the season of the year. Being a wader it naturally avoids dry times, when shallow waters are scarce. Generally seen singly, seldom more than a pair, though one day in August, 1904, I counted twenty-four of this neat little Dottrel on a half-mile stretch of bare water and on another occasion (January 1906) I saw eight on a hole you could throw a stone across. Of these nests, which are very hard to see, I have only found two, one in April this year containing three eggs, and the other in September, 1904, with two eggs. This last nest was a depression formed by pushing aside a few pebbles on a quartz gravel bank, the cavity being slightly floored with small fragments of dried vegetation and portions of the flower-head of the Button grass (*Eleusine ægyptiaca*). On the 29th November, 1901, I watched a pair with two well-feathered youngsters.”‡

Mr. Robert Hall§ records a specimen secured in Sandford, Southern Tasmania, on October 20th, 1911.

Although this bird was not described till 1818, it was painted by Watling, Nos. 249, 250; and Latham mentions it in manuscript as the “Crescent Plover, perhaps a variety of the Ringed Plover.” The description was apparently never published.

The male bird figured and described was collected on the Dawson River, Queensland, by Mr. Charles Barnard, on November 24th, 1908.

* Ramsay, *Proc. Zool. Soc.* (Lond.) 1877, p. 336.

† Cox and Hamilton, *Proc. Lin. Soc. N.S.W.*, 2nd ser., Vol. IV., p. 419, 1889.

‡ Berney, *Emu*, Vol. VI., p. 112, 1907.

§ Hall, *ib.*, Vol. XI., p. 210, 1912.

ELSEYA MELANOPS RUSSATA.

WESTERN BLACK-FRONTED DOTTEREL.

CHARADRIUS RUSSATUS Jerdon, Madras Journ. Lit. Sci., Vol. XII., p. 213, 1840 ; India.

Charadrius russatus Jerdon, Madras Journ. Lit. Sci., Vol. XII., p. 213, 1840.

Ægialitis melanops Kearnland, Trans. Roy. Soc. South Austr., Vol. XXII., p. 186, 1898 ;

Carter, Emu, Vol. III., p. 176, 1904 ; Hartert, Nov. Zool., Vol. XII., p. 201, 1905 ; Ingram, Ibis 1909, p. 614 ; Ogilvie-Grant, *ib.* 1910, p. 181.

Charadrius melanops marngli Mathews, Nov. Zool., Vol. XVIII., p. 218, 1912 (North-west Australia).

DISTRIBUTION. West Australia and Northern Territory.

Adult male and female. Differ from *C. m. melanops* in being paler and smaller, and in having less black on the second outer tail-feather.

Immature. Two young birds from North-west Australia have the crown of the head brown, with lighter tips ; a white semicircular patch of down at the back of the neck, followed by a semicircle of black down reaching to the eye ; back downy-black with cream tips ; upper tail-coverts brown with filamentous downy tips still adhering ; tail dark with filamentous downy tips ; frontal band indicated by brown feathers with white tips ; scapulars and tertials rufous-brown, with darker cross-bars ; small wing-coverts dark brown ; median ones rufous with dark bars ; lower ones white.

Nest. A slight depression in the earth.

Eggs. Clutch, two to four very similar to those laid by the Eastern bird, but darker ; axis 26.5-27 mm., diameter 21-21.3.

Breeding-season. November (Carter and Kearnland), August (Kearnland).

My collector, Mr. J. P. Rogers, who obtained specimens of this subspecies, writes me: "On a water-hole about one mile east of my camp at Marngle Creek there were about fifteen of these birds. On returning from Mungi I found them numerous on the shingle and sand beach of the Fitzroy River. On Jegurra Creek it was also found. This is a resident species in West Kimberley and is common on most large water-holes and on the sandy beaches of the rivers."

Mr. Tom Carter sends the following: "Regularly distributed from the North-west to the South-west of this state, occurring mostly in pairs on the

THE BIRDS OF AUSTRALIA.

banks of inland pools or creeks of fresh and brackish water. I never took eggs at Point Cloates, but a tame cat once brought a female to the shearing shed that was evidently breeding on a neighbouring salt marsh. Every year a pair visits a stock tank near my home at Broome Hill, usually appearing about the middle of October, and leaving in January of the following year. On November 28th, 1909, a nest was taken containing four eggs, which were laid in a depression of ironstone gravel on the top of a ridge, 300 yards from the water. They were taken as they were in the regular path for sheep to be driven. The bird laid again somewhere near, and had half grown young at the tank on January 13th, 1910."

"At all creeks or pools passed between Mullawa and the Fitzroy River [North-west Australia], this active little Dotterel was found either singly or in pairs, running along the margin of the water in search of small aquatic insects. During August several young birds, just able to fly, were shot at the camel depot, and one fresh egg was picked up beside a pool. On 7th November I found several pairs of newly-hatched young ones on the sandy bed of the Fitzroy River. Although probably not more than a day or two old, they ran very quickly for some distance before being caught. When one was captured it invariably proved that the other had escaped during the chase. When newly hatched, the Black-fronted Dotterel is probably the most handsome of all Australian birds at that age."*

The following description by Jerdon is given in full:—

Charadrius russatus Jerdon, Madras Journ. Lit. Sci., Vol. XII., p. 213, 1840.

Catalogue of the Birds of the Peninsula of India, by T. C. Jerdon.

C. russatus.—New Species?

Descr. Forehead, streak on either side, extending through the eyes, ears, and meeting behind, and a broad pectoral band deep brownish black; top of the head, back and wing coverts of the usual brown cinereous hue of the *Ringed Plovers*; band above the eyes, encircling the head, except in front, and plumage beneath white; wing-coverts edged with white; quills and medial tail feathers, dark brown; external tail feathers white, with a brown band which almost disappears on the outermost feather; scapulars deep maroon colour; upper tail coverts tinged with rufous; bill yellow with black tip; orbits bright yellow; legs orange yellow.

Length $6\frac{1}{2}$ inches; wing $4\frac{1}{2}$; tail $2\frac{2}{10}$ ths; bill at front nearly $\frac{6}{10}$ ths; tarsus rather more than 1 inch.

I procured a single specimen of this apparently new species of *Ringed Plover* at the edge of the Pulicat Lake near Madras, in the month of June. Its distinguishing feature is the maroon colour of the scapulars. Whether this is a permanent mark, or, as I conjecture may be the case, only assumed during the breeding season, I am at present unable to determine.

There can be no doubt that the preceding description was drawn up from a specimen of this species. As Jerdon deliberately states he procured it himself, we must accept this species as having straggled to India! also, we cannot

* Kearland, *Trans. Roy. Soc. S. Austr.*, Vol. XXII., p. 186, 1898.

WESTERN BLACK-FRONTED DOTTEREL.

consider that the East Australian form could reach that place: consequently Jordan's name must be used for the West Australian form, replacing my own *C. m. marngli*.

The following letter will explain itself, but it should be published to correct a big mistake in the *Catalogue* of the Eggs in the British Museum:—

27, KENDRICK ROAD,

READING,

25th March, 1913.

MY DEAR MATHEWS,

Re the egg figured in the *Catalogue of Birds' Eggs* in the British Museum, Vol. 2, plate I, figure 9, as that of *Ægialitis geoffroyi*.

The history of this is as follows:—

The egg in question was brought from China by me in 1894 and was undoubtedly that of *Rostratula capensis*. As, however, the parent bird was not seen or obtained I merely kept it for comparison with eggs in the Museum Collection, intending to destroy it after having done so. This I unfortunately omitted to do, and it got mixed up with some other eggs I presented. At that time Seebohm was re-arranging the egg collection at Cromwell Road, and finding this among my eggs from South China, and seeing that it agreed with *supposed* eggs of *Æ. geoffroyi* collected by Swinhoe, he wrote that name on my egg, and thus it was registered as presented by me.

When Oates was writing the *Catalogue*, he very naturally supposed I *had* presented the egg; and as I had told him I had not given the Museum a single specimen that I was not thoroughly satisfied with in the matter of correct identification, he wrote a paragraph in the *Egg Catalogue* (Vol. 2, p. 20), saying that all doubts as to the authenticity of these eggs had now been set at rest by a properly identified specimen presented by me. Fortunately I saw the proofs and was thus able to have this paragraph cut out, but the specimen had been plated.

In "The Ibis" 1905, p. 61, I drew attention to this in a footnote, and although it was quite correctly printed in the proof submitted to me for correction, when the article appeared I found the second and third paragraphs of the footnote had been transferred to the body of the article!

I wrote correcting the error, and my letter appeared in "The Ibis" of the same year (1905), p. 287.

That Seebohm named these eggs by pure guess-work I think you will see by referring to what he wrote in "The Ibis" 1879, p. 154: "British Birds with Coloured Illustrations of their Eggs," Vol. 3, p. 40 (footnote); and "The Geographical Distribution of Plovers, &c.," p. 147.

It is strange that in the two last-named works he refers to the Painted Snipe, and yet it never seems to have occurred to him that *all* the eggs he got from Swinhoe were those of that species! He saw clearly enough that Swinhoe's statement that they were those of *Charadrius fulvus* was wrong, but he certainly did not mend matters by attributing *some* of them to *Ægialitis geoffroyi*.

I may add that I explained the whole affair to Dr. Bowdler Sharpe, who permitted me to withdraw and destroy the egg.

Believe me,

Yours very sincerely,

C. B. RICKETT.

FAMILY—R E C U R V I R O S T R I D Æ .

GENUS—H Y P S I B A T E S .

- HYPsIBATES Nitzsch, in Ersch und Gröbers Ency.,
 Vol. XVI., p. 150, 1827 Type *H. himantopus*.
Himantopus Bonnaterre, Tabl. Ency. Méth. Ornith.,
 Vol. I., pp. lxxxii., 24, 1791 (not *Himantopus*
 Muller, 1786) Type *H. himantopus*.
Macrotarsus Lacepède, Tabl. Ois., p. 18, 1799 (not
Macrotarsus Link, 1795, or *Macrotarsus* Lacepède,
 1799 (Mammal)) Type *H. himantopus*.
Himantellus "Rafinq, 1815," Gray, Cat. Gen. Subgen.
 Birds, p. 117, 1855.)

THIS family consists of a group of wading birds with long slender bills, long necks, and very long legs. Seebohm included all the species in his genus *Himantopus*, as he pointed out that the species were connected by various features. Thus the members of the genus *Hypsibates*, as commonly and here restricted, have straight bills, no hind toe, and small webs to their toes. *Cladorhynchus* has also a straight bill, but the toes are fully webbed and no hind toe. *Recurvirostra* has the bill upturned, the toes fully webbed, and a hind toe is present. In coloration, upon which Seebohm based his affinities, a similar range is noticeable.

The straight-billed birds are called Stilts, and those with upturned bills Avocets; they are very closely related, as some of the species of *Avocet* have straightish bills when immature. The members of the genus *Hypsibates* have the bill long, thin, and flattened; it is straight, with the tip of the upper mandible decurved over the lower one. The culmen is about half the length of the metatarsus; shorter than the exposed tibia, but longer than the middle-toe with claw. The nostrils are linear, placed near the base of the culmen and situated in a groove which extends half the length of the bill. The wings are long and pointed, about twice the length of the metatarsus. The tail is short and square, about one-third the length of the wing. The legs are very long—about twice as long as the culmen and half the length of the wing; the bare tibia is longer than the culmen; the metatarsus is covered with reticulated scales, which tend to fusion in the adult. The outer toe is connected to the middle one by a small basal web; the inner toe is not connected. No hind toe.

Key to the Species.

<i>A.</i>	Larger	..	..	..	..	..	<i>H. l. leucocephalus,</i>	p. 146.
<i>B.</i>	Smaller	..	..	..	..	..	<i>H. l. assimilis,</i>	p. 151.

HYPsIBATES LEUCOCEPHALUS LEUCOCEPHALUS.

WHITE-HEADED STILT.

HIMANTOPUS LEUCOCEPHALUS Gould, Synops. Birds Austr., pt. II., pl. 34, 1837; New South Wales.

Himantopus leucocephalus Gould, Synops. Birds Austr., pt. II., pl. 34, 1837; *id.*, Birds Austr., Vol. VI., pl. 24, 1841; Sturt, Narr. Exp. Centr. Austr., Vol. II., App., p. 50, 1849; Gould, Handb. Birds Austr., Vol. II., p. 246, 1865; Ramsay, Proc. Zool. Soc. (Lond.) 1867, p. 600; *id.*, *ib.* 1877, p. 337; *id.*, Proc. Linn. Soc. N.S.W., Vol. II., p. 198, 1878; Seebohm, Ibis 1886, p. 233; *id.*, Geogr. Distr. Charadr., p. 283, 1887; Ramsay, Tab. List Austr. Birds, p. 20, 1888; North, Austr. Mus. Cat., No. 12, p. 310, 1889; Legge, Austr. Assoc. Adv. Sci., Vol. IV., p. 964, 1892; Campbell, *ib.*, Vol. V., p. 440, 1893; Sharpe, Cat. Birds Brit. Mus., Vol. XXIV., p. 317, 1896; North, Rep. Horn Sci. Exp., pt. II., Zool., p. 104, 1896; *id.*, Birds County Cumberl., p. 111, 1898; Kearnland, Birds Melb. Distr., p. 115, 1900; Campbell, Nests and Eggs Austr. Birds, p. 801, 1901; Lyons, Emu, Vol. I., p. 138, 1902; Campbell, *ib.*, Vol. II., p. 17, 1902; Bryant, *ib.*, Vol. V., p. 25, 1905; Hall, Key Birds Austr., p. 83, 1906; Berney, Emu, Vol. VI., p. 113, 1907; Mathews, Handl. Birds Austral., p. 25, 1908; *id.*, Emu, Vol. IX., pp. 3 and 55, 1909; Littler, Handl. Birds Tasm., p. 134, 1910; French, Vict. Nat., Vol. XXVIII., p. 182, 1912; *id.*, Emu, Vol. XI., p. 209, 1912.

Himantopus novæ-hollandiæ Bonaparte, Comptes Rendus Sci. (Paris), Vol. XLIII., p. 421, 1856; substitute-name for *H. leucocephalus* Gould.

Himantopus seebohmi Hartert, Katal. Vögels. Mus. Senckenberg, p. 220, 1891 (substitute-name for *H. leucocephalus* Gould).

Hypsibates leucocephalus leucocephalus Mathews, Nov. Zool., Vol. XVIII., p. 219, 1912.

DISTRIBUTION. Queensland, New South Wales, Victoria, Tasmania, South Australia.

Adult male. Differs from *Hypsibates leucocephalus assimilis* in being larger.

Adult female. Similar to the adult male.

Immature. Differs from the adult in being brownish-black above, the crown of the head greyish-brown and the back of the neck grey.

Nest. "A bare shallow hollow in the earth" (Mellor). "A slight structure consisting merely of a few short pieces of rushes and grass placed in and around a depression at the foot of a clump of rushes growing near the water's edge" (Ramsay).

WHITE-HEADED STILT.

“Composed principally of a dried alga, with other aquatic plants, placed on clumps of the dwarf salt marsh plant, being built up about 9 inches above the water. They measured approximately 8 inches across. Dead twigs of *Salicornia* were placed on the top of the nests.” (French.)

Eggs. Clutch, four; ground-colour greenish stone, marked all over with irregular-shaped spots of dark purplish-black and smaller underlying ones of lavender; axis 44.5 to 45 mm., diameter 30.5 to 31.5.

Breeding-season. September (Queensland, Ramsay), October (Victoria, French), April, May, August (Campbell).

CAPTAIN S. A. WHITE reports from South Australia that: “The white-headed Stilts were not nearly so plentiful this year [1912] as I have seen them in former years. One large flock was met with in the Albert Passage which connects the two lakes; many were immature birds which could be distinguished by their brownish appearance and thick harsh cry. When feeding and sinking knee-deep in the soft mud we observed these birds often up to their bodies in a soft place, and it was with the greatest difficulty that they extracted their long legs and had to use their wings in doing so. Their gait when walking in the mud is very ungainly, for they lift their feet so high. The eyes of these birds are extremely large and prominent and they would see well at night.”

Mr. J. W. Mellor writes: “These birds are regular visitors to the swamps at the Reed-beds just west of Adelaide, South Australia, coming in the spring while the flood waters from the River Torrens are still over the low-lying land, and keeping in little flocks of six or eight, and leaving us about breeding-season, but a few stay on right through the spring, and breed, leaving us when the water has quite dried up, taking their young with them. Last season I came across a nest right out in the open, in December: the land had been under water several feet, but the sun had dried this up, and the pair of birds took up their quarters on a slightly rising piece of ground. It was some time before their nest was discovered, as the male bird would give the signal of your approach while you were yet a long distance off, and the female would at once run away, and soon rise into the air with her mate, and make frantic attacks upon the intruder long before he came near the nest, flying round and round, and then darting down and flying past one’s head, uttering a plaintive cry of distress. After some days of searching the nest was found by my brother, and contained four beautifully and heavily-blotched eggs, placed in the usual way as other waders, the small ends all meeting one another, and so preventing them from rolling away, each one helping to keep the other in a central position, and as the nest is a mere bare shallow hollow on the earth, this is necessary; there were a few little bits of straw and stick placed round, but this had apparently been picked up and put there as the bird sat

THE BIRDS OF AUSTRALIA.

on the eggs, to make the immediate locality appear more like the surrounding ground, and so hide the appearance of the eggs. Next day I proceeded to the locality, and with field-glasses watched the birds, but in spite of keeping the place in view all the time, the female managed to get up without the exact spot being marked, and my brother and I spent at least an hour searching the ground over before we could find the eggs again, so similar was the nest and eggs to the surrounding open earth and short grass. The eggs were just hatching, so I did not take them, but took a photo *in situ*, and next day the young were out and gone, and the two parent birds kept about for some time and little later they all departed. I have also seen these birds on Lakes Alexandria and Albert, and the Coorong, South Australia. They also like the marshy mouths of the rivers where they empty into the sea. Their food consists of small insects and crustaceans, etc., which they secure in the soft mud by probing their long slender bill down until their head also is lost to view. Probably they breed extensively on the shallow lakes of the interior, as I have received broken off shells from these places which correspond with those of this bird. Their dog-like little bark can be heard at night as they fly over, sounding like a lot of terrier dogs flying through mid air and is very weird."

Mr. Frank Howe sent me the following: "At Mumble (a huge tank about $3\frac{1}{2}$ miles from the homestead at Kow Plains, Victoria) I saw about sixteen birds. They were feeding in the water at a depth of about eight inches. When wading they present a most peculiar appearance, lifting the legs fairly high out of the water, and with the head and neck sunk into the shoulders. The call note is not unlike the bark of a dog. The legs were of a pink colour, irides red, and the bill was black."

"While on the wing they continually uttered a plaintive piping cry, as if of distress, but which they seldom emitted when on the ground."*

"Along the margins of these lagoons [of North-eastern Victoria] or in patches where the water on subsiding leaves tiny mud islets, there are found the eggs of the White-headed Stilt, the owners of which fly round excitedly, uttering their peculiar puppy-like cry, and finally alight a little way off, standing in water as deep as their long legs will allow."†

"These beautiful birds have just finished breeding in a swamp near Laverton, the first eggs being laid early in October. This is probably the first authentic record for Victoria. The nests which were about 10 to 15 feet apart were in the middle of a fairly large swamp, and were placed on clumps of the dwarf salt marsh plant, *Salicornia australis*, Sea-Crab Grass. They were

* Gould, *Handb. Birds Austr.*, Vol. II., p. 247, 1865.

† Campbell, *Emu*, Vol. II., p. 17, 1902.

WHITE-HEADED STILT.

composed principally of a dried alga, *Lyngbya æstuarii*, with other aquatic plants, and measured approximately 8 inches across, being built up about 9 inches above the water. Dead twigs of the *Salicornia* were placed on the tops of the nests. Several nests were placed on burnt clumps of the Awned Sword-Sedge, *Gahnia trifida*, about 12 inches above the water. Most of the nests contained four eggs, but one nest was discovered which contained five eggs. Most of the eggs were placed with the small ends pointing towards the middle of the nest, but in some instances several of the eggs had the small ends pointing outward. Unfortunately before all the eggs were hatched out the swamp commenced to dry up, and the old birds left the locality, causing a number of eggs and young birds to be deserted.”*

“This Stilt is a tall, slender, graceful bird, of proportions so delicate that the long legs would seem quite out of keeping with the small body, were not its carriage so easy and well poised that no incongruity is noticeable. The specimen I am showing you was shot on the big swamp at Altona, and was one of a flock of over 100. They are rather ugly, laboured fliers, sticking their long legs out behind, and making a tremendous row really all the time they are flying, the sound being comparable to a number of small dogs trying to bark whilst suffering from a severe cold in the vocal chords. Their food consists entirely of insects and small snails found on the water’s margin or captured by wading knee deep into the water.”†

“Like many more Waders, the Stilts in their movements are governed largely by the seasons, and as ours [Richmond District, Queensland] is notoriously uncertain it is not surprising to find that it is as likely to be one month as another when these birds are here. They cannot be relied upon for any month out of the twelve. They are seen in congregations of four or five up to forty or fifty.

“They, I have no doubt, occasionally nest in the district, though I have never found their eggs; that they do not do so more often is due to our having such poor sites for the purpose, and the presence of sheep everywhere. I saw a pair in February, 1902, that I felt sure by their antics had eggs or young. In February, 1903, and again in the same month in 1905, I watched with glasses birds in immature plumage amongst a mob of old ones.”‡

The birds described are from New South Wales.

The nomenclature and forms of this species do not offer much trouble.

The species was first described by Gould and the synonymy is fairly clean. Bonaparte noted that someone had called it *Himantopus novæ-hollandiæ* and

* French, *Vict. Nat.*, Vol. XXVIII., p. 182, 1912.

† Bryant, *Emu*, Vol. V., p. 25, 1905.

‡ Berney, *ib.*, Vol. VI., p. 113, 1907.

THE BIRDS OF AUSTRALIA.

when Hartert wrote up the *Katal. Vögels. Mus. Senckenb.*, he lumped this species with *Cladorhynchus leucocephalus* in the genus *Himantopus*. This course necessitated the provision of a new name for the present form, which was therefore called *Himantopus seebohmi*. The Australian birds and those occurring in New Zealand were for a long time lumped, but Sharpe in the *Cat. Birds Brit. Mus.*, Vol. XXIV., separated the New Zealand form and used Ellman's name of *picatus*. The non-recognition by Sharpe and Buller of subspecies, caused the recording from New Zealand of the Australian *H. leucocephalus*. The nomenclature and status of the New Zealand bird has been investigated by Iredale and myself (*Ibis* 1913, p. 255), and it is unnecessary to here again detail the reasons but simply record the conclusions arrived at.

The forms I would admit are—

Hypsibates leucocephalus leucocephalus Gould; Eastern Australia.

Hypsibates leucocephalus assimilis Mathews; West Australia, Northern Territory.

These birds are smaller with a shorter tarsus and shorter culmen. As females are noticeably smaller than males, it is necessary to see that series are correctly sexed. A series of typical birds give ♂ wing 239-245, tarsus 126, culmen 64; ♀ wing 221-233, tarsus 123-127, culmen 61. North-western birds give, wing ♂ 223-232, tarsus 109-119, culmen 59-61.

A series of birds from East Timor do not fall into either of the preceding, and I propose to call them—

Hypsibates leucocephalus timorensis, subsp. n.; East Timor, ? North Celebes. The measurements read: ♂ wing 235-239, tarsus 117-119.5, culmen 63-64; ♀ wing 208-219, tarsus 108-114, culmen 59-63.

It will be seen that the wing is almost as long as in the typical form, while the tarsus is shorter: the females are noticeably smaller. I doubtfully ally with these, birds from the North Celebes as they have the same wing-measurements though slightly longer tarsus, but not as long as the East Australian form. The name to be used for the New Zealand White-headed Stilt is—

Hypsibates leucocephalus albus Ellman, as the bird is simply a subspecies of *H. leucocephalus*. It differs at sight by the white collar being mottled with black, and the tail is always darker—rarely a bird is procured which has the collar pure white, and such a bird has been the cause of records of the Australian form from New Zealand. The New Zealand Black Stilt is quite a well-marked distinct species, having a much longer bill and much shorter and stouter legs than any form of *H. leucocephalus*.



J.G. Keulemans, del.

Witherby & Co.

$\frac{1}{2}$
HYPsIBATES LEUCOCePHALUS.
(WHITE-HEADED STILT).

HYPSIBATES LEUCOCEPHALUS ASSIMILIS.

NORTHERN WHITE-HEADED STILT.

(PLATE 141.)*

HYPSIBATES LEUCOCEPHALUS ASSIMILIS Mathews, Nov. Zool., Vol. XVIII., p. 219, 1912 ;
North-west Australia.

Himantopus leucocephalus Kearland, Trans. Roy. Soc. South Austr., Vol. XXII., p. 187,
1898 ; Hall, Emu, Vol. II., p. 65, 1902 ; Carter, *ib.*, Vol. III., p. 176, 1904 ; Hartert,
Nov. Zool., Vol. XII., p. 201, 1905 ; Ingram, Ibis 1907, p. 393.

Hypsibates leucocephalus assimilis Mathews, Nov. Zool., Vol. XVIII., p. 219, 1912.

DISTRIBUTION. West Australia, Northern Territory.

Adult male. Hind-neck, mantle, scapulars, and wings, both above and below, glossy black with obsolete wavy cross-bars on the long innermost scapulars ; head, lower hind-neck and back below the mantle pure white ; tail also white, the middle feathers tinged with grey ; throat and entire under-surface white including the axillaries ; primary- and secondary-quills below fringed with white at the tips ; bill black ; iris dark red ; tarsi and feet pink. Total length 388 mm. ; culmen 59, wing 223-230, tail 75, tarsus 109-119.

Adult female. Similar to the adult male but smaller, and the feathers of the mantle and scapulars inclining to brown.

Immature male. Distinguished from the adult by the dark grey on the head and nape, the brown on the back and scapulars and the darker tips to the tail-feathers. Some of the feathers of the back have white edgings and the under wing-coverts are margined with white. As the bird advances in age the grey on the head and nape disappears.

Nest. Similar to that made by *H. l. leucocephalus*.

Eggs. Similar to those of the Eastern bird.

Breeding-season. May to September (Carter).

MR. TOM CARTER writes : " These Stilts occur at pools and swamps in some numbers after heavy rains. In 1900 scores of them were breeding in the flooded salt marsh at Maund's Landing, from May 1st to September 12th. Most of the nests were on the ground in small islands, but scores were built in the tops of samphire bushes standing out of the water, and were quite compact structures. The prolonged laying season (5 months) was caused by constant robbing of the eggs by natives and passing teamsters, and they

The Plate is lettered *Hypsibates leucocephalus*.

THE BIRDS OF AUSTRALIA.

were certainly good eating. On June 25th, 1894, I saw a colony breeding on an island in a small marsh on the road between the Gascoyne and Minalya Rivers."

Mr. J. P. Rogers collected this bird at Roebuck Towns Station on Jegurra Creek, West Kimberley. They were seen in large flocks on the swamps.

"At the large fresh water lagoon near Lake Way these birds were found in great numbers. On 14th July a few were shot for the pot, and amongst those secured, young birds predominated. After the rains fell in January large flocks of Stilts visited the pools along the Fitzroy River, where their peculiar croaking notes often betrayed their presence amongst the coarse grass tussocks growing in the water. When disturbed, their manner of extending their long legs behind whilst flying gave them a very grotesque appearance."*

The type figured and described was collected at Parry's Creek, North-west Australia, on October 1st, 1908, by Mr. J. P. Rogers.

* Kearland, *Trans. Roy. Soc. S. Austr.*, Vol. XXII., p. 187, 1898.

GENUS—CLADORHYNCHUS.

- CLADORHYNCHUS Gray, List Genera Birds, p. 69, 1840 Type *C. leucocephalus*.
Leptorhynchus Du Bus, Mag. de Zool., 1835, pl. 45 (not
of Lowe, 1822; Clift, 1829; Guerin, 1830; or
Menetr, 1832) Type *C. leucocephalus*.
Recurvirostra, Boie, Isis 1826, p. 979 (not of Linné, 1758) Type *C. leucocephalus*.
Xiphidiorhynchus Reichenbach, Vögel Neuhol., pt. I.,
p. 28, 1845 Type *C. leucocephalus*.
Timeta Gistel, Naturg. Thier. Schul., p. ix., 1848 .. Type *C. leucocephalus*.

THE solitary member of the genus *Cladorhynchus* differs from those of *Hypsibates* in its stouter legs and fully webbed toes. The culmen is much more than half the length of the metatarsus, the wings are about twice the length of the metatarsus, while the tail is short but nearly half the length of the wing. There is no hind toe.

CLADORHYNCHUS LEUCOCEPHALUS.

BANDED STILT.

(PLATE 142.)

RECURVIROSTRA LEUCOCEPHALA Vieillot, Nouv. Dict. d'Hist. Nat., Vol. III., p. 103, Sept., 1816; Victoria.

Recurvirostra leucocephala Vieillot, Nouv. Dict. d'Hist. Nat., Vol. III., p. 103, 1816.

Recurvirostra orientalis Cuvier, Le Règne Anim., Vol. I., p. 496, Dec., 1816 (Victoria).

Leptorhynchus pectoralis Du Bus, Mag. de Zool. 1835, pl. 45 (Victoria).

Himantopus palmatus Gould, Synops. Birds Austr., pt. II., pl. 33, 1837 (Victoria).

Cladorhynchus pectoralis Gray, List Genera Birds, p. 69, 1840; Gould, Birds Austr., Vol. VI., pl. 26, 1841; Sturt, Narr. Exp. Centr. Austr., Vol. II., App., p. 49, 1849; Gould, Handb. Birds Austr., Vol. II., p. 248, 1865; Ramsay, Proc. Linn. Soc. N.S.W., Vol. II., p. 198, 1878; *id.*, *ib.*, Vol. VII., p. 57, 1882; *id.*, Tab. List Austr. Birds, p. 20, 1888; North, Austr. Mus. Cat., No. 12, p. 311, 1889; Keartland, Trans. Roy. Soc. South Austr., Vol. XXII., p. 187, 1898.

Xiphidiorhynchus pectoralis Reichenbach, Vögel Neuholl., pt. I., p. 28, 1845.

Cladorhynchus orientalis Selys-Longchamps, Bull. de l'Acad. Roy. Brux., Vol. XVIII., pt. I., p. 9, 1851.

Himantopus pectoralis Schlegel, Mus. Pays-Bas, Vol. V., Scolopaces, p. 108, 1864; Seebohm, Geogr. Distr. Charadr., p. 288, pl. XIV., 1887; Legge, Proc. Austr. Assoc. Adv. Sci., Vol. IV., p. 963, 1892; Campbell, *ib.*, Vol. V., p. 439, 1893.

Cladorhynchus leucocephalus Salvin, Ibis 1874, p. 252; Sharpe, Cat. Birds Brit. Mus., Vol. XXIV., p. 324, 1896; Hall, Key Birds Austr., p. 83, 1899; Campbell, Nests and Eggs Austr. Birds, p. 803, 1901; Milligan, Emu, Vol. III., p. 223, 1904; Hall, Key Birds Austr., p. 83, 1906; North, Rec. Austr. Mus., Vol. VI., p. 343, 1907; Mathews, Handl. Birds Austral., p. 25, 1908; Littler, Handb. Birds Tasm., p. 135, 1910; Ogilvie-Grant, Ibis 1910, p. 180; Mathews, Nov. Zool., Vol. XVIII., p. 219, 1912.

Cladorhynchus australis Lawson, Emu, Vol. IV., p. 131, 1905 (n.n.).

Cladorhynchus leucocephalus rotnesti Mathews, Austral Av. Rec., Vol. I., p. 31, 1912 (Rottnest Island, South-west Australia).

DISTRIBUTION. New South Wales, Victoria, Tasmania, South Australia, South-west Australia, North-west Australia.



Zeilemans, del.

Witherby & Co

$\frac{1}{2}$
CLADORHYNCHUS LEUCOCEPHALUS.
(*BANDED STILT*).

BANDED STILT.

Adult male. Head and neck all round and entire back white, like the sides of the breast and abdomen, under tail-coverts, and inner under wing-coverts; marginal coverts brown, edged with white; upper wing-coverts and scapulars black; small coverts on outer edge of wing brown; bastard-wing, primary-coverts and quills dark brown, the five outer primaries paler brown on the inner webs, the remainder white on the inner webs; secondaries white except two of the inner ones which have a brown spot on the outer web, the long innermost secondaries black like the scapulars; tail, middle feathers pale grey, outer feathers grey on outer webs, white on inner ones; breast chestnut, the feathers of which have white bases followed by blackish and very broadly tipped with chestnut, so that the white of the fore-neck and the chestnut on the breast is divided by a narrow-blackish line, the feathers on the middle of the abdomen dark brown, some of which are suffused with chestnut; bill black; iris dark brown; tarsi and feet yellow. Total length 405 mm.; culmen 69, wing 193, tail 80, tarsus 88.

Adult female. Similar to the male.

Young male (bird of the year). Differs from the adult in the entire absence of the chestnut, or dark pattern, on the breast and middle of the abdomen, these parts being white like the rest of the under-surface; upper wing-coverts very narrowly edged with white.

The first stage of advance towards the breeding-plumage is shown in specimens which have the chestnut pattern on the breast and the dark patch on the middle of the abdomen just faintly outlined on the white under-surface, while others demonstrate more clearly the colour of these parts, which can be seen by the chestnut, more especially on the sides of the breast, which is still much intermixed with white.

Other specimens also show the advance of the chestnut and the dark portion on the middle of the abdomen: the white, so prevalent in the first one mentioned above, is fast disappearing and the next stage appears to be the fully adult.

Nest. A rough construction placed in a low salt bush.

Eggs. "Clutch four, the ground-colour varies from an olive brown to creamy brown irregularly spotted and blotched with black, in shape oval but slightly pointed" (Ramsay). Axis 44-48; diameter 29-33.

CAPTAIN S. A. WHITE, of South Australia, says: "This bird makes its appearance on the Adelaide plains during the winter months, remaining in small colonies to breed. The nest is a rough construction placed generally in a low salt bush."

Mr. Charles Belcher writes: "This species visits Southern Victoria only in seasons when there is abundance of water. It was seen a few times in the Geelong District.

"In certain favourable localities it may be seen in small numbers in company with other waterfowl wading about in the mud at the mouths of estuaries, in swamps and lagoons. It does not visit us [Tasmania] until near the end of the year, and again departs, after a short stay of a few months, for the interior of the mainland. As may be expected from the nature of its haunts, its food consists of all manner of molluscs and insects gathered in

THE BIRDS OF AUSTRALIA.

and about the lagoons and mud flats it frequents. Its note may best be described as somewhat similar in sound to the barking of a pup.”*

“Several of these birds visited the swamps near the Fitzroy River [North-west Australia] during our stay in that locality. They were observed feeding in company with Avocets and White-headed Stilts.”†

“Towards the close of my stay this species was beginning to arrive [on Rottnest Island]. A flock of 70 or 80 took up their quarters on the largest of the salt lagoons. The majority appeared to be adults. They were very wary, and on being disturbed, flew to the centre of the lagoon, where they floated lightly on the water till the danger had passed.”‡

Mr. Milligan§ found that this species did not fly away on being fired at, on Rottnest Island; seventeen birds being killed, the result of four barrels. The whole plumage of each of the seventeen birds was white, excepting the wings, which were brownish-grey.”

The bird figured and described was collected in Victoria.

This bird is confined to Australia, and is such a distinct form that it is peculiar in that it has such a complicated synonymy.

In August, 1835, Du Bus described it in the *Mag. de Zool.*, pl. 45, that paper being published, as the account read before the Acad. Roy. Sci. Bruxelles on January 17th, 1835, had not been brought out at that date. It, appeared however in the *Bull. Acad. Roy. Sci. Brux.*, Vol. VI., p. 419, pl. 7, included in the December number, which probably did not come out until 1836. This latter entrance has generally been quoted as the earliest but the one here used has precedence. There Du Bus proposed for it the new genus *Leptorhynchus*, choosing for the species name *pectoralis*.

Two years later Gould described the species again as *Himantopus palmatus*. Gray then pointed out that Du Bus's genus-name was preoccupied many times and introduced the generic *Cladorhynchus* to replace it, at the same time synonymising Gould's name with that of Du Bus. When Reichenbach published the German translation of Gould's work, he considered *Xiphidiorhynchus* a preferable name to *Cladorhynchus*, no other reason being given. In 1848 Gistel proposed *Timeta* as a new name for *Leptorhynchus* Du Bus preoccupied, apparently being unaware or careless of the fact that two earlier substitutes were already in literature. In 1851 Selys-Longchamps showed that the bird had been described by Cuvier many years before Du Bus or Gould, and revived Cuvier's specific-name. Not much notice was taken of

* Littler, *Handb. Birds Tasm.*, p. 135, 1910.

† Kearland, *Trans. Roy. Soc. S. Austr.*, Vol. XXII., p. 187, 1898.

‡ Lawson, *Emu*, Vol. IV., p. 131, 1905.

§ *Emu*, Vol. III., p. 224, 1904.

BANDED STILT.

this, and it was not until 1874 that Salvin noted that not only was Selys-Longchamps correct but that Vieillot had anticipated Cuvier; and now that Vieillot's name has been utilised in the British Museum *Catalogue*, it is generally accepted. This bird is peculiar in this family in that it possesses bold markings on the under-surface when adult, but the immature agrees with other Stilts in having a pure white under-surface.

Just recently I separated the Western birds on account of the black colour of the wings, but for the present I am suppressing this form as it may be that the Western birds I examined were freshly moulted while the Eastern ones were not.

GENUS—RECURVIROSTRA.

RECURVIROSTRA Linné, Syst. Nat., 10th ed., p. 151,

1758 Type *R. avosetta.*

Avosetta Brunnich, Zool. Fund., p. 72, 1771 Type *R. avosetta*.

Avocetta Boddaert, Tabl. Plan. Enl., p. 21, 1783 Type *R. avosetta*.

IN the genus *Recurvirostra* the bill is long and recurved, the feet are fully webbed, and a hind-toe is present ; otherwise it resembles *Hypsibates*. The bill is very long, somewhat flexible, flattened, then tapering with a strong upward turn and the tip again decurved ; the nostrils a very narrow slit in a flat, short groove ; the culmen is almost as long as the metatarsus and equal to the tail. The wings are long and pointed, and more than twice the length of the tail, which is square. The metatarsus is reticulated and the toes are fully webbed, and there is a hind-toe.

The members of this genus are interesting as regards coloration: the general coloration is white with black wings; the European form has the back of the head black; the Australian has the head and neck deep chestnut; the North American has the head, neck, upper-back, and upper-breast fawn, whilst the South American has the head and neck pure white.

Key to the Species.

- A. Bill over 90 mm. in ♂ *R. n. novæ-hollandiæ*, p. 160.
B. Bill under 90 mm. in ♂ *R. n. stalker*i, p. 163.

RECURVIROSTRA NOVÆ-HOLLANDIÆ NOVÆ-HOLLANDIÆ.

EASTERN RED-NECKED AVOCET.

RECURVIROSTRA NOVÆ-HOLLANDIÆ Vieillot, Nouv. Dict. d'Hist. Nat., Vol. III., p. 103, 1816; Victoria.

Recurvirostra novæ-hollandiæ Vieillot, Nouv. Dict. d'Hist. Nat., Vol. III., p. 103, 1816; Buller, Birds New Zeal., p. 201, 1873 (New Zealand); Harting, Ibis 1874, p. 258; Buller, Trans. New Zeal. Inst. 1874, Vol. VII., p. 206, 1875; *id.*, Birds New Zeal., 2nd ed., Vol. II., p. 20, 1888; *id.*, Trans. New Zeal. Inst. 1891, Vol. XXIV., p. 81, 1892; Legge, Proc. Austr. Assoc. Adv. Sci., Vol. IV., p. 962, 1892; Campbell, *ib.*, Vol. V., p. 439, 1893; Sharpe, Cat. Birds Brit. Mus., Vol. XXIV., p. 333, 1896; North, Birds County Cumberl., p. 111, 1898; Campbell, Nests and Eggs Austr. Birds, p. 804, 1901; Lyons, Emu, Vol. I., p. 137, 1902; Sharpe, Hist. Coll. Brit. Mus., Birds, p. 150, 1906; Hall, Key Birds Austr., p. 83, 1906; Berney, Emu, Vol. VI., p. 113, 1907; Mathews, Handl. Birds Austral., p. 25, 1908; Littler, Handb. Birds Tasm., p. 135, 1910.

Recurvirostra rubricollis Temminck, Manuel d'Orn., 2nd ed., Vol. II., p. 592, 1820 (Victoria); Gould, Birds Austr., Vol. VI., pl. 27, 1842; *id.*, Handb. Birds Austr., Vol. II., p. 249, 1865; Ramsay, Proc. Zool. Soc. (Lond.) 1877, p. 338; *id.*, Proc. Linn. Soc. N.S.W., Vol. II., p. 198, 1878; *id.*, *ib.*, Vol. VII., p. 411, 1883; *id.*, Tabl. List Austr. Birds, p. 20, 1888; North, Austr. Mus. Cat., No. 12, p. 309, 1889; Keartland, Birds Melb. Distr., p. 115, 1900.

Himantopus novæ-hollandiæ Seebohm, Hist. Brit. Birds, Vol. III., p. 75, 1885.

Himantopus rubricollis Seebohm, Ibis 1886, p. 229; *id.*, Geogr. Distr. Charadr., p. 292, 1887.

Recurvirostra novæ-hollandiæ novæ-hollandiæ Mathews, Nov. Zool., Vol. XVIII., p. 219, 1912.

DISTRIBUTION. Queensland, New South Wales, Victoria, Tasmania, South Australia.

Adult. Similar to the adult of *R. n. stalkeri* but larger (especially in the bill) and the chestnut on the head not so rich.

Nest. Made on little heaps of stiff grass.

Eggs. "Clutch four. Ground colour light stone to creamy yellow, some of the former tint have a faint olive-green shade, some are heavily blotched towards the thicker end, others sparingly covered with spots, dots and freckles of dark amber-brown and black, with a few obsolete spots of slate grey" (Ramsay). Axis 48-51 mm., diameter 32-36.

Breeding-season. September to December (Bennett).

EASTERN RED-NECKED AVOCET.

MR. EDWIN ASHBY found this species in large flocks in parts of South Australia, and also shot it at Black Springs, South of Burra, at Christmas time.

Mr. J. W. Mellor writes: "These birds are generally known as Barking Snipe, on account of the peculiar barking note they utter while flying, and when in a small mob flying over at night, one would imagine that a company of small dogs was approaching. They are also called 'ladies,' on account of the graceful, slender, awl-like bill they possess, and with this they probe in the mud and slush, and secure their food, which consists of small insects, etc., found in these swampy situations, they will wade leg deep in the water, and often float if the water gets too deep, and cross over any narrow calm arm of the swamps. I have seen them at the Reed-beds near Adelaide, but have not known them to breed there. While on a trip to Lake Albert in October, 1894, I saw flocks of these birds numbering some hundreds. They kept to the shallows, and flew up and away at my approach; they were not breeding, but I gained from an authentic source that in the previous spring, September and October, some of the birds had nested in the middle of a shallow swamp there [Lake Albert] making their nests on little heaps of stiff grass that grew a foot out of the water, laying 3 or 4 eggs of unusually large size for so small a bird. I am informed that the birds bred again in the same locality on a more recent occasion, but the advance of civilisation is fast driving them away, as they are shot at and destroyed. They breed in the interior on the shallow lakes in wet seasons."

"This bird is very local in its habits, and never seems to be very plentiful in any part of the Continent; it is met with occasionally in large flocks; and . . . it sometimes is met with on the Lower Herbert [River, Queensland]. One or two were observed during my visit; but I failed to obtain any specimens."*

"I have only seen it twice [in Richmond District, North Queensland], in December, 1902, and in February, 1903, a single bird each time, feeding along the water's edge. On following it up on one of the occasions for further observation, it took to deep water and swam to the other side, and on my going round it swam back again."†

When Latham wrote up the *General Synopsis of Birds*, he confused Dampier's account with that of the American Avocet, and of course in this he was followed by Gmelin, who referred in part to this species when he described his *Recurvirostra americana*. This misuse was due to the fact that the American bird had the head, neck, shoulders and upper-breast of a fawn colour, whereas the Australian bird was described as having a red head and neck but was

* Ramsay, *Proc. Zool. Soc.* (Lond.) 1877, p. 338.

† Berney, *Emu*, Vol. VI., p. 113, 1907.

THE BIRDS OF AUSTRALIA.

considered to be the same. Had specimens been compared the differences are so striking that no such conclusion could have been arrived at.

Latham again met with it among the Watling Drawings. Drawing No. 265 has the data "22 inches from the extremities. This bird is found along the shores of the sea coast"; Drawing No. 266 is labelled "Native name Antiquatch"; and Drawing No. 267 has written upon it "The Natural Size. This is a rare bird, only being seen on some Lagoons. A species of the Avocetta." All three are beautiful paintings and easily recognisable as perfectly distinct from the American bird, yet all are identified by Latham as "American Avoset." Subsequently it was differentiated by Temminck in 1820 under the name *Recurvirostra rubricollis*, and by this name it was known until 1873, when Buller noted that Vieillot had, in 1816, described it as *R. novæ-hollandiæ*, and for the next twenty years Australians persisted in the former name, while Buller was followed by few authors. In 1896, however, Sharpe used Vieillot's name correctly in the *Catalogue* of the Birds in the British Museum, and since that date it has been consistently accepted, and here again the alteration has caused little inconvenience.

I have not seen a nestling of this species, nor have I noted any description. I have seen a downy nestling of the South American *R. andina*, and it had the bill very much turned up in that state, whereas in the fully-grown immature of *R. americana* the bill shows very little upward inclination.



J.G. Keulemans, del

Witherby & C'

$\frac{1}{2}$
RECURVIROSTRA NOVÆ-HOLLANDIÆ.
(RED-NECKED AVOCET).

RECURVIROSTRA NOVÆ-HOLLANDIÆ STALKERI.

WESTERN RED-NECKED AVOCET.

(PLATE 143.)*

RECURVIROSTRA NOVÆ-HOLLANDIÆ STALKERI Mathews, Nov. Zool., Vol. XVIII., p. 220, 1912; Northern Territory.

Recurvirostra novæ-hollandiæ Kearnland, Trans. Roy. Soc. S. Austr., Vol. XXII., p. 186, 1898; Carter, Emu, Vol. III., p. 176, 1904; Ingram, Ibis 1909, p. 614.

Recurvirostra novæ-hollandiæ stalkeri Mathews, Nov. Zool., Vol. XVIII., p. 220, 1912.

DISTRIBUTION. Northern Territory; North-west Australia.

Adult male. Head, hind-neck, throat, and fore-neck chestnut; lower hind-neck, back, outer scapulars, tail, and entire under-surface pure white including the under tail-coverts, axillaries, and under wing-coverts; the small marginal coverts round the bend of the wing white like the bastard-wing, greater coverts, secondaries, and inner primaries, some of the latter tipped with dark brown; primary-coverts and primary-quills black, the basal portion white; median wing-coverts and long innermost secondaries very dark brown; some of the inner scapulars dark brown, others are brown on the inner web and white on the outer one; small feathers round the eye white which widens out and forms a patch below the eye; bill black; iris dark red; tarsi and feet slate-blue. Total length 457 mm.; culmen 87, wing 225, tail 86, tarsus 94.

Adult female. Similar to the adult male.

Nest. None made.

Eggs. Similar to those laid by *Hypsibates leucocephalus* but larger (Carter).

Breeding-season. May (Carter).

THIS is one of the few birds noted by Dampier in 1699, who figured it in *A Voyage to New Holland*, Vol. III., p. 123, 1709. He there pointed out how it differed from the European species.

Mr. Tom Carter writes: "This bird is not nearly so plentiful as the White-headed Stilt. A few pairs were breeding in company with the Stilts on the flooded marsh at Maund's Landing in May, 1900. Their eggs were laid on the ground, and in a small colony apart from the Stilts. The eggs were very similar in coloring to some of those laid by the Stilts, but they are larger in size, and the coloring not so varied. The Avocets were much wilder than the

* The Plate is lettered *Recurvirostra novæ-hollandiæ*.

THE BIRDS OF AUSTRALIA.

Stilts, flying right away from the nests and remaining away as long as any one was near; whereas the Stilts showed great anxiety, fluttering closely round with legs outstretched behind and uttering their peculiar puppy-like cries. The outstretched legs of the Stilts, of a deep pink color, gave an impression at first glance of the birds having a tail like the Tropic Bird. Single Avocets were occasionally observed at inland fresh-pools."

"This well-known wader was frequently observed in the shallow swamps near the Fitzroy River [North-west Australia]. Running amongst the weeds in the shallow swamp, the Avocet dexterously secures a supply of minute aquatic insects by the aid of its peculiar awl-like bill. They were often seen in company with the White-headed Stilts."*

The type-bird figured and described was collected in the Northern Territory by the late William Stalker on February 1st, 1906.

* Kearland, *Trans. Roy. Soc. S. Austr.*, Vol. XXII., p. 186, 1898.

FAMILY—SCOLOPACIDÆ.

THE Wading Birds which constitute the family *Scolopacidæ* are easily recognisable, and seem to form quite a natural group—yet almost defy accurate definition. In this conclusion I find I am in accord with most other writers who have endeavoured to provide a diagnosis of the family.

Sharpe, in the *Catalogue* of the Birds in the British Museum, Vol. XXIV., 1896, p. 91, gives the following :—

Tarsus with transverse plates both before and behind.

With a web connecting both toes with the inner one

Toes not webbed at all, but cleft to the base

Totaninae.

Scolopacinae.

This is poor as well as incorrect (Sharpe called them subfamilies of the family *Charadriidæ*), and the first genus included in the *Totaninae* is diagnosed (p. 337) : “ Bill distinctly arched : Tarsus transversely scaled and reticulated behind.”

Ridgway in the *Manual of North American Birds*, 2nd ed., 1896, tried also to fix shortly the features of the family *Scolopacidæ*, as follows :—

(p. 143) Front of tarsus covered by a continuous row of transverse scutellæ ; bill slender with blunt and more or less rounded (sometimes expanded) tip, the exposed culmen longer than middle toe without claw.

The latter part fails, as on p. 158 one of the members is stated as having the “ Middle toe, without claw, longer than exposed culmen,” while the former would include many Vanelline extra-American forms.

In the *Water Birds of North America*, Vol. I. (p. 108), a better statement is given :—

Bill exceedingly variable—short or long, straight, slightly recurved, or decidedly decurved, but usually more or less expanded laterally at the end, which is more or less sensitive. Hind toe usually present, rarely absent.

Scolopacidæ. Tarsus rounded in front, where clothed with a single row of transverse scutellæ.

This is followed up by the explanation (p. 178) :—

“ They embrace a very great variety of forms, from the diminutive ‘ Peeps ’ (*Actodromas* and *Ereunetes*) smaller than a Sparrow, to the large Curlews, of Ibis-like stature and appearance. The bill may be either straight, bent upward, as in the Avocets (e.g. *Limosa* and *Terekia*) or strongly decurved like a sickle ; narrowed at the end or widely expanded into a paddle-shaped form (*Eurynorhynchus*). The legs may be short and stout (as in *Arquatella*, *Calidris*, etc.) or of almost Stilt-like length (as in *Micropalama*, *Totanus*, etc.).

THE BIRDS OF AUSTRALIA.

Between these wide extremes of form, however, there are genera possessing characters intermediate in almost every conceivable degree—so much so as to render it extremely difficult to tabulate the characters of the numerous genera.”

Perhaps the most explicit account is that given by Coues (*Key to North Amer. Birds*, 2nd ed., 1884, p. 614):—

“Snipe and their allies form a well-defined and perfectly natural assemblage, one of the two largest limicoline families, agreeing with Plover in most essential respects yet well distinguished from the pluvialine birds. In general, the bill is much elongated, frequently several times longer than the head, and in those cases in which it is as short as in plover, it does not show the particular, somewhat pigeon-like shape described under *Charadriidæ*, being slender and soft skinned throughout. It is generally straight, but frequently curved up or down. The nasal grooves, always long and narrow channels, range from one-half to almost the whole length of the bill; similar grooves usually occupy the sides of the under mandible; the interramal space is correspondingly long and narrow, and nearly naked. This length, slenderness, grooving and peculiar *sensitiveness*, are the prime characteristics of the scolopacine bill.”

This definition of the bill it is impossible to amend. The wings are long and pointed with the first primary longest. The legs are long or short as admitted by Ridgway, etc.

A review of the genera admitted and their relationships cannot be entered into here, but the questions raised will be discussed under each genus admitted. As before noted, I have forsaken the lumping policy adopted in my “Reference List” on account of its great tendency to propagate and encourage errors. In the words of Coues once more: “If so great a subdivision . . . as is here presented be objected to, it is replied that the variations in external form are so great that a single genus, in the modern acceptation of the term, cannot contain them all; and if more than one genus be adopted . . . it is not easy to stop short of the number here adopted.”

Though in the genera *Numenius*, *Limosa*, and some others, it has been recorded that the female is larger with a noticeable long bill, I find that this feature, according to my measurements, runs all through the family.

GENUS—NUMENIUS.

NUMENIUS Brunnich, Zool. Fund., p. 76, 1771 .. Type *N. arquata*.

Also spelt—

Numenius Temminck, Manuel d'Orn., 2nd ed., Vol. II., p. 601, 1820.

Neomenius Billberg, Synops. Faunæ Scand., Vol. I., Pars. 2, tab. A, and p. 159, 1828."

Emendation of *Numenius*.

Cracticornis Gray, List Genera Birds, 2nd ed., p. 88,

1841 Type *N. arquata*.

Also spelt—

Cractiornis Gray, Cat. Gen. Subgen. Birds, p. 116, 1855.

LARGEST Scolopacine Waders with very long arched bills, long wings, moderately long legs, strong feet, and medium tails.

The very long bill is strongly arched, with the tip of the upper mandible curved down and projecting beyond the lower, obtuse and little thickened. The nostrils are linear, near the base of the bill, placed in a groove which extends more than half the length of the bill. The culmen is longer than the tail and more than half the length of the wing. Wings long with the first primary longest. Tail rounded and moderately long but less than half the length of the wing.

Metatarsus long and scutellated in front, but regularly covered with the hexagonal scales on the hinder part. In the nestling the frontal scutellation is quite regular, but in many adults the scutellæ appear broken up towards the heel. The toes are strong, about half the length of the metatarsus; the anterior ones are connected by a web near the base only, the skin of the soles laterally dilated; claws flattened and blunt; hind toe rather long, provided with a claw.

The preceding diagnosis only refers to the Curlews, as I restrict it to *N. arquata*, *cyanopus*, and *longirostris*. The genus *Numenius* has been generally used to include the "Curlews" and "Whimbrels," and also the "Little Whimbrel." Apparently any large, and in the case of the last-named, even a small Wader with a curved bill was referable to the genus *Numenius*, even by splitters. Yet no group has been more split up into genera than the present one. It appears appropriate to here quote what Coues wrote when monographing the *Tringæ* of North America, just over fifty years ago: "But while in other groups, particularly among the smaller land birds, the divisions have been minute and greatly extended, there seems to have

THE BIRDS OF AUSTRALIA.

been a general reluctance on the part of ornithologists with regard to recognizing these divisions. It may be that in this group Nature allows more external variation in forms very closely allied than is usual: but until this is proved to be the case, it seems necessary, to keep pace with the progress of ornithology, to consider the characters of the different sections as of full generic value.”*

This dictum has been commonly recognised by accurate workers, but while accepting very limited genera in the smaller Waders, these have just as consistently rejected better-marked genera among these larger ones.

Thus, upon examination, I find that the Curlew group, as above restricted, can be accurately defined and separated from the “Whimbrels” without taking into consideration the coloration of the head.

The bird known as the Thinbilled Curlew does not enter into the genus *Numenius* but would come closer to the Whimbrels. In coloration however it approaches the former, but is separable from both by its long legs and small feet. I propose for it the genus-name *ZARAPITA*, nov.: Type, *N. tenuirostris* Vieillot.

The Whimbrels, commonly so called, are easily separated by their smaller size and the head-coloration. It appears to have been overlooked that the structural proportions are quite different in these and in the Curlews, and I propose to emphasise them by tabulating the differences:—

<i>Numenius</i> : bill longer than half the wing.	<i>Phæopus</i> : shorter.
<i>Numenius</i> : bill longer than tail.	<i>Phæopus</i> : shorter.
<i>Numenius</i> : bill longer than metatarsus and middle toe together.	<i>Phæopus</i> : shorter.
<i>Numenius</i> : tail shorter than metatarsus and middle toe together.	<i>Phæopus</i> : longer.
<i>Numenius</i> : middle toe about or less than half the metatarsus.	<i>Phæopus</i> : middle toe more than half the metatarsus.

In every detail except coloration and the last item, *N. tenuirostris* agrees with *Phæopus*: as however the long legs and short toes—the latter being much less than half the metatarsus are distinctive, it seems absolutely necessary to recognise this aberrant form as worthy of generic separation. The species *Numenius minutus*, seems to have really little affinity with any of the previously-mentioned forms, and Sharpe was fully justified in introducing the genus *Mesoscolopax* for it alone. It is also suggested that Seebohm’s reference to *Bartramia* will solve the problem of its relationship. The character of the

* *Proc. Acad. Nat. Sci.* (Philad.) 1861, pp. 170, 205.

NUMENIUS.

metatarsus is so unlike that of the Numenioid species that it cannot be classed with them. In its proportions it differs entirely—the short curved bill; the proportionately very long wings, about four times as long as the bill; the tarsus longer than the bill and twice the length of the middle toe; the long tail—all characterise this bird.

It seems therefore necessary to dispose of the species classed under *Numenius* in the *Catalogue* of the Birds in the British Museum as follows:—

Numenius *arquata* (Linné)=*arquata arquata*=*arquata lineata*.

cyanopus Vieillot.

longirostris=*americanus* Bechstein, 1811.

Zarapeta, gen. nov.: Type *tenuirostris* Vieillot.

Phæopus *phæopus phæopus* (Linné).
phæopus variegatus (Scopoli).

hudsonicus Latham.

tahitiensis (Gmelin).

borealis (Forster).

NUMENIUS CYANOPUS.

AUSTRALIAN CURLEW.

(PLATE 144.)

NUMENIUS CYANOPUS Vieillot, Nouv. Dict. d'Hist. Nat., Vol. VIII., p. 306, 1817; New South Wales.

Numenius cyanopus Vieillot, Nouv. Dict. d'Hist. Nat., Vol. VIII., p. 306, 1817; Gould, Handb. Birds Austr., Vol. II., p. 277, 1865; Buller, Trans. New Zeal. Inst. 1876, Vol. IX., p. 333, 1877; Haast, *ib.*, p. 427; Ramsay, Proc. Linn. Soc. N.S.W., Vol. II., p. 198, 1877; *id.*, Proc. Zool. Soc. (Lond.) 1877, p. 339; Salvadori, Ornith. Papua. e Mol., pt. III., p. 330, 1882; Seebohm, Geogr. Distr. Charadr., p. 326, 1887; Ramsay, Tab. List Austr. Birds, p. 20, 1888; Legge, Pap. Proc. Roy. Soc. Tasm. 1889, p. 134, 1890; *id.*, Austr. Assoc. Adv. Sci., Vol. IV., p. 959, 1892; Taczanowski, Mém. l'Acad. Imp. Sci. St. Petersb., Ser. VII., Vol. XXXIX., p. 940, 1893; Sharpe, Cat. Birds Brit. Mus., Vol. XXIV., p. 350, 1896; North, Birds County Cumberl., p. 111, 1898; Hall, Key Birds Austr., p. 84, 1899; Campbell, Nests and Eggs Austr. Birds, p. 805, 1901; Carter, Emu, Vol. III., p. 176, 1904; Hartert, Nov. Zool., Vol. XII., p. 201, 1905; Hall, Key Birds Austr., p. 84, 1906; Mathews, Handl. Birds Austral, p. 26, 1908; Littler, Handb. Birds Tasm., p. 136, 1910; Buturlin, Emu, Vol. XI., p. 96, 1911; Mathews, Nov. Zool., Vol. XVIII., p. 220, 1912.

Numenius australasianus Gould, Synops. Birds Austr., pt. IV., App., p. 6, 1838 (New South Wales).

Numenius australis Gould, Proc. Zool. Soc. (Lond.) 1837, p. 155, 1838 (New South Wales); *id.*, Birds Austr., Vol. VI., pl. 42, 1848; Schrenck, Reisen Amur-Landes, p. 426, 1860; Radde, Reisen Suden von Ost-Sibir., p. 338, 1863; Diggles, Handb. Birds Austr., Vol. II., pl. 101, 1877.

Numenius rostratus Gray, Ann. Mag. Nat. Hist., Vol. IX., p. 194, 1843 (substitute-name).

Numenius major (not Stephens) Temminck and Schlegel, Fauna Japonica, Aves, p. 110, pl. 66, 1849.

Numenius rufescens Gould, Proc. Zool. Soc. (Lond.) 1862, p. 286 (Formosa); *id.*, Birds Asia, Vol. VII., pl. 60, 1864; Swinhoe, Ibis 1863, p. 410.

Numenius tahitiensis (not Gmelin) Swinhoe, Proc. Zool. Soc. (Lond.) 1871, p. 410.

DISTRIBUTION. East Siberia, migrating southwards to Tasmania and New Zealand in winter.



J.G. Keulemans, del

Witherby & Co

$\frac{2}{5}$

NUMENIUS CYANOPUS.
(CURLEW.).

AUSTRALIAN CURLEW.

Adult female. General colour of the upper-parts dark grey and brown, some of the feathers, particularly on the wings, margined with white; the feathers of the back and scapulars dark brown margined with paler brown; rump, upper tail-coverts and tail regularly barred with dark brown and grey, the latter tipped with white; lesser wing-coverts almost black with white or pale margins, medium and greater coverts somewhat paler; bastard-wing and primary-coverts black; primary-quills dark brown notched with white on the inner web, the first three uniform on the outer web, the remainder mottled with light-coloured spots on the outer web and tipped with white, the shafts straw-coloured; secondaries brown notched on both webs with white; head and hind-neck brown, the feathers margined with grey; forehead, lores, and sides of face minutely streaked with brown and white; throat almost pure white; fore-neck and chest more coarsely streaked; abdomen and under tail-coverts paler and more inclining to white and the shaft-streaks narrower; some of the under tail-coverts narrowly barred with brown; axillaries and under wing-coverts barred with brown and white; bill dark brown, tip black, base of lower mandible flesh-white; iris brown; tarsi and feet leaden-blue. Total length 650 mm.; culmen 187, wing 317, tail 122, tarsus 93.

Adult male. Similar to the adult female but smaller.

Adult in summer-plumage has distinctly rufescent edges to the feathers.

Nest and Eggs.

"Breeds in Southern parts of Eastern Siberia, as far west as Southern Baikal and Upper Olekina (tributary of the Lena) and as far north as about 56-57° N. on (Lena) Olekina."*

Mr. J. P. ROGERS when at Derby, North-west Australia, found these birds common, being in parties from two up to about twelve, and although they were wild they often flew within gunshot. "They were usually seen on the beach. Early in March, 1911, at Point Torment north of Derby, many single birds were seen, and by the 20th of the month they were noticed in small flocks. At Sundoion on that day eight birds flew along the beach towards the open sea, they were in a line and at equal distances apart and high up. They travelled straight down the sound until they were out of sight. They were identified by their call. This is the first time I have seen these birds behaving in this manner. As a rule flocks have always flown in an irregular scattered way, each bird taking his own course and not following a leader.

"By March 27th hundreds were seen at Point Torment, and they were not so wild as in December, January, and February, in which months there were only a few about, which appeared to be the resident birds of this locality, as they were always in the same place and got to know me and kept far out of gunshot. In fact all waders were more numerous towards the end of March and much more tame.

"This species was usually on the beaches and mud flats, but at high tide, especially at Spring tides, used to go out into the samphire on the edges of the salt marsh and wait there until the tide was about one third out."

* Buturlin, *Emu*, Vol. XI., p. 96, 1911.

THE BIRDS OF AUSTRALIA.

Captain S. A. White says : " I have met with this bird on all the Australian Coast line and Islands of Bass Strait, Tasmania and Kangaroo Island. They congregate in small parties and are very timid and wary birds."

Mr. Edwin Ashby observed this species at Edithburgh, Yorke Peninsula, South Australia, in January, 1903.

Mr. J. W. Mellor observes : " This bird does not breed anywhere in Australia. They come down to South Australia in November and December and leave again in May and June. They wade in the mire of the rivers, and at the mouth of Port Adelaide river they are seen in small flocks of 6 or 8 on the open flats when the tide is out, but it is very difficult to get near them as they are extremely wary. They were observed on the Capricorn Islands of South Queensland in October, where they had apparently just arrived from their northern breeding-grounds and were going south."

Mr. Tom Carter says : " The Curlew was a common bird along the North-west coast, arriving towards the end of September. Odd birds might be seen throughout the winter. In 1902 I observed large flocks at a big mangrove swamp near the North West Cape in July and again at the same place in August. These birds certainly never bred in the Arctics that year. The Curlew occurs all round the coast of Albany, but they are not nearly so numerous along the South-west coast as on the North-west. Most probably a question of food supply but wherever they are, they are always the same wary birds. I have observed them on many occasions perching in the branches of dead mangrove, usually at high tide, when their feeding-grounds are under water."

" Very common during October, November and December [in New South Wales]. Frequents sandy-beaches, shallow inlets, and flats at the mouths of rivers. Plentiful at Botany Bay."*

Swinhoe,† who collected the type of "*rufescens*," says : " The single female specimen that I procured of this very rufescent species was shot on the sand-flat that divides the Tamsuy River, near its mouth. It had for some days been observed, in company with its mate, passing to and returning from its feeding-ground, the peculiar character of its long-drawn cry distinguishing it at once from the large species that visit these shores during the winter, the note more resembling the melancholy whistle of the Grey Plover. From the developed state of its ovary and the late season of the year when observed, I have little hesitation in stating that it is a resident species."

" I have noticed the Curlews are always with us before August is quite gone, though they are not found in great numbers till towards the end of November, when thousands are to be seen at high tide perched upon the

* North, *Birds County Cumberl.*, p. 111, 1898.

† *Ibis* 1863, p. 410.

AUSTRALIAN CURLEW.

mangrove scrub waiting for the water to recede, at which time they pounce down upon the crabs, hooking them out of holes with their long bills, which seem specially adapted for this purpose. I have made very careful observations and inquiries as to their time of departure, and I should fix it as between March and June, but several reliable boatmen state that a few winter with us, and odd birds are always to be seen about Western Port Bay.”*

Schrenck says he found a young bird on 11 (23) July, 1856, on the South Amur between the mouths of the Ussuri and Ssungari near the village of Sselgako, which he considered had bred either on the Amur itself or to the North of it.

Radde reports that he shot four adult birds on June 7 (19), near the mouth of the Kumara. They lived on the flat shore of the island, which was partly covered by shingle and sand, which was left dry at low tide.

After he had passed the mouth of the Kumara and come into the wider valley of the Amur, where flat sand-shores become more abundant, he frequently found this species. In spite of the lateness of the season (the middle of June) the birds were not preparing for breeding. They lived in flocks on the open shores. They were sometimes noticed flying in the wedge-shaped flocks. On April 10th, 1858, this species was observed in plains above the Bureja Mountains.

He also includes in this species the Curlew which is very common in spring and autumn on the Tarei-nor. Here it first appeared on April the 19th, was numerous on the 25th, and on the 29th was going North. On the 26th June flocks of the Curlew were observed between Kulussutajefsk and the new fortress at Tschindantsk, they were, however, so unusually shy that he could not get within gunshot of them. On the 22nd August, they were seen going south.

The bird figured and described is a female, collected at Cooktown on December 27th, 1899, by Olive and presented to me by Mr. H. C. Robinson.

This bird is described in the *Index Ornith. Suppl.*, p. 306, 1801, by Latham, as follows:—

“Common Curlew var.—A Bird of this kind has been brought from *New Holland*: it seems to differ chiefly in having the bill considerably larger in proportion, and the ground colour of the plumage dull ferruginous, instead of brown; bill black; irides yellow; legs dull blue.”

No Latin name seems to have been imposed by Latham, so that when Vieillot monographed the genus, he introduced *Numenius cyanopus* for the preceding; writing: “*Numenius arquatus*, Var., Lath., ne peut être une variété de notre courlis, puisqu’il a les pieds bleus; le bec noir et considérablement

* Shepherd, in *Campbell's Nests and Eggs Austr. Birds*, p. 805, 1901.

THE BIRDS OF AUSTRALIA.

plus long, à proportion de la taille; le fond de son plumage d'un ferrugineux sale, inclinant au brun, et l'iris jaune. On le trouve à la Nouvelle Hollande."

In 1837-8, Gould, without much investigation, described the bird giving it two names, *australasianus* and *australis*, in two papers meant to be identical. Its only other synonym of note was also given by Gould, who, receiving a bird in summer-plumage from Formosa, did not recognise it and renamed it *rufescens*. This bird is figured in the Watling Drawings and this would appear to be the source of Latham's description. No. 239 has written upon it by the artist: "near the Natural size, the english Curlue, the Native name Gaur-arr-re-bing." A note in Latham's handwriting reads "Common Curlew var., Latham Syn.V. 119." There is a name *Numenius rostratus* Latham MS. which appears to be based on this drawing, but was not published until 1843, so that it only ranks in the synonymy.

GENUS—P H Æ O P U S .

PHÆOPUS Cuvier, Le Règne Anim., Vol. I., p. 485, 1816 Type *P. phæopus*.

MEDIUM Scolopacine Waders with long arched bills, long wings, long tails, moderately long legs, and strong feet.

Though the structural features are generally as in the preceding, the proportions differ: the bill is more slender, more strongly arched, and shorter than the tail and less than half the wing. The tail is proportionately longer, with the legs shorter and the feet stronger; the middle toe is more than half the length of the metatarsus and the two together exceed the bill in length.

It seems strange that such a well defined and distinct genus should have been lumped, as in the A.O.U. *Checklist* (3rd ed., 1910, pp. 124-125), when *Pelidna* is admitted as generically separable from *Erolia* (pp. 115-116), and *Helodromas* and *Rhyacophilus* (pp. 120-121) are admitted as valid.

PHÆOPUS PHÆOPUS VARIEGATUS.

AUSTRALIAN WHIMBREL.

(PLATE 145.)*

Tantalus variegatus Scopoli, Del. Flor. Faun. Insub., fasc. II., p. 92, 1786 ; Luzon.*Tantalus variegatus* Scopoli, Del. Flor. Faun. Insub., fasc. II., p. 92, 1786.*Scolopax luzoniensis* Gmelin, Syst. Nat., p. 656, 1789 (Luzon).*Numenius luzoniensis* Latham, Index Ornith., Vol. II., p. 711, 1790.*Numenius atricapillus* Vieillot, Nouv. Dict. d'Hist. Nat., Vol. VIII., p. 303, 1817 (Luzon).*Numenius phæopus* (not Linné) Pallas, Zoogr. Rosso-Asiat., Vol. II., p. 169, 1827 ; Radde, Reisen Suden von Ost-Sibir., p. 340, 1863.*Numenius uropygialis* Gould, Proc. Zool. Soc. (Lond.) 1840, p. 175, 1841 (Australia) ; *id.*, Birds Austr., Vol. VI., pl. 43, 1848 ; *id.*, Handb. Birds Austr., Vol. II., p. 279, 1865 ; Masters, Proc. Linn. Soc. N.S.W., Vol. I., p. 61, 1876 ; Ramsay, *ib.*, Vol. II., p. 198, 1878 ; *id.*, Tab. List Austr. Birds, p. 20, 1888.*Numenius tahitiensis* (not Gmelin) Cassin, in Perry's Exp. Japan, Vol. II., p. 228, 1856.*Numenius tahitiensis id.*, *ib.*, pl. III.*Numenius variegatus* Salvadori, Ann. Mus. Civ. Stor. Genov., Vol. XVIII., p. 330, 1882 ; *id.*, Ornith. Papua. e Mol., Vol. III., p. 332, 1882 ; Sharpe, Cat. Birds Brit. Mus., Vol. XXIV., p. 361, 1896 ; North, Birds County Cumberl., p. 111, 1898 ; Hall, Key Birds Austr., p. 84, 1899 ; *id.*, *ib.*, 1906 ; Mathews, Handl. Birds Austral., p. 26, 1908 ; Littler, Handb. Birds Tasm., p. 137, 1910.*Numenius melanorhynchus* (not Bonaparte) Taczanowski, Bull. Soc. Zool. France, Vol. VIII., p. 340, 1883.*Numenius phæopus variegatus* Stejneger, Bull. U.S. Nat. Mus., No. 29, p. 138, 1885 ; Seebohm, Geogr. Distr. Charadr., p. 330, 1887 ; Taczanowski, Mém. l'Acad. Imp. Sci. St. Petersb., Ser. VII., Vol. XXXIX., p. 943, 1893 ; Campbell, Nests and Eggs Austr. Birds, p. 806, 1901 ; Buturlin, Emu, Vol. XI., p. 96, 1911 ; Mathews, Nov. Zool., Vol. XVIII., p. 220, 1912.

DISTRIBUTION. East Siberia (breeding), migrating southwards to Australia and Tasmania in winter.

Adult male. General colour above dark brown, with buff or white spots on the margins of the feathers ; upper tail-coverts barred with white and brown, tail darker than the back and barred with white ; wing-coverts paler than the back but similarly marked ; bastard-wing, small marginal coverts, and primary-coverts dark brown* The Plate is lettered *Numenius variegatus*.



$\frac{1}{2}$
NUMENIUS VARIEGATUS.
(WHIMBREL).

AUSTRALIAN WHIMBREL.

tipped with white ; primary-quills dark brown notched with white on the inner-webs, the four outer-primaries uniform on the outer-web, the remainder tipped and notched with white on both webs ; secondaries similarly marked but rather paler in colour, innermost long secondaries like the scapulars ; head dark brown with an irregular white line down the middle ; lores, eyebrows, and sides of face minutely streaked with brown and white, neck all round brown with buff margins to the feathers, becoming paler and coarser on the breast and sides of the body ; middle of abdomen almost white ; under tail-coverts buffy white barred with brown ; axillaries and under wing-coverts regularly barred with brown and white ; bill black, white at base of lower-mandible ; iris blackish-brown ; feet olivaceous-grey. Total length 405 mm. ; culmen 62, wing 223, tail 86, tarsus 56.

Adult female. Similar to the adult male but larger : culmen 72, wing 228, tail 99, tarsus 58.

Nest and Eggs. Undescribed.

“ Breeds in Eastern Siberia as far west as Lena and Baikal. In the north it breeds in large numbers on Kolyma as far as 69° N., on the borders of the tundras. On Ob and Yenisei no Whimbrels and the only straggler that I have seen from Yenisei belongs to the typical form [*N. phæopus*].”*

MR. J. P. ROGERS, writing from Derby in North-west Australia, reported this as not so numerous as the Curlew, and that they were hard to collect. They were usually seen on the beach early in March, 1911. They were not common, but towards the end of the month they were noticed going north and became very numerous. They usually associated with *N. cyanopus*, both on the beaches and when on the wing ; but after the end of March, both flocks seemed to keep to themselves. This species sometimes feeds on grass-land, and often in samphires at high tide.

On Melville Island the same collector found them from November to February ; in the latter month they seemed to be more numerous.

Mr. J. W. Mellor says : “ These birds were seen on the Capricorn Island, Queensland, in October, 1910. They were on the coral strands at low tide, on North West Island. They waded in the shallows between the sandy shore and the outer edge of the reef, driving their long curved bill into the soft sand in search of the multitudes of small sea lice and other salt-water objects that swarm these warm seas. They were in company with other kinds of waders, and appeared to have just arrived from Siberia.”

“ As far as my observations go, this species is a somewhat rare visitor to our shores. When it does straggle down here it is with other migratory waders.”†

“ The Eastern Whimbrel is a visitant to the Bering Islands during the migration in spring and autumn ; but being very wary and their stay short they are only seldom seen. During the latter part of May, 1882, I observed

* Buturlin, *Emu*, Vol. XI., p. 96, 1911.

† Littler, *Handb. Birds Tasm.*, p. 138, 1910.

THE BIRDS OF AUSTRALIA.

a flock on the flat sandy borders of the river, behind the village, but the birds disappeared in the fog before I could secure a specimen. During the following spring two females were secured at Emilianovski Mys, on the northern shore, as late as the 20th and 21st of June. They were single, and their eggs large and swollen, so that there is a probability that a few pairs remain during the summer and breed.

“In the fall, September 3rd, 1883, a large flock was observed on the mountain plateau, north of the village, feeding upon the berries of *Empetrum nigrum*. Two young birds were taken on the steamer in the beginning of August, when at sea between Kamtschatka and Bering Island.”†

Radde found it in East Siberia on April 30th, 1859.

The bird figured and described is a female collected at Cooktown by E. Olive on October 4th, 1899, and presented to me by Mr. H. C. Robinson.

The first three names given to this bird are all founded on the description of a bird from Luzon, by Sonnerat. These are *Tantalus variegatus* Scopoli, 1786, *Scolopax luzoniensis* Gmelin, 1789, and *Numenius atricapillus* Vieillot, 1817, and of course the first-named is the one to be used, the others ranking as absolute synonyms. The only other synonyms are *Numenius uropygialis* of Gould and *N. melanorhynchus* Taczanowski.

* Stejneger, *Bull. U.S. Nat. Mus.*, No. 29, p. 139, 1885.

GENUS—MESOSCOLOPAX.

MESOSCOLOPAX Sharpe, Cat. Birds Brit. Mus., Vol. XXIV.,

pp. 338, 371, 1896 Type *M. minutus*.

SMALL Scolopacine Waders with a short arched bill, long wings, legs and feet, and long tail. The bill is only slightly curved and is less than a fourth of the wing, and also shorter than the metatarsus. The metatarsus is regularly scutellated both before and behind; a feature which separates it at once from the Numenioid Waders, and shows its relationship with the Totanoid forms. The middle toe is slightly shorter than half the length of the metatarsus. The tail is long and rounded.

MESOSCOLOPAX MINUTUS.

LITTLE WHIMBREL.

(PLATE 146.)*

NUMENIUS MINUTUS Gould, Proc. Zool. Soc. (Lond.) 1840, p. 176, July, 1841; New South Wales.

Numenius minutus Gould, Proc. Zool. Soc. (Lond.) 1840, p. 176, 1841; *id.*, Birds Austr., Vol. VI., pl. 44, 1848; *id.*, Handb. Birds Austr., Vol. II., p. 280, 1865; Swinhoe, Ibis 1875, p. 132; Salvadori, Ornith. Papua. e Mol., Vol. III., p. 334, 1882; Seebohm, Geogr. Distr. Charadr., p. 335, 1887; Styan, Ibis 1891, p. 509; Taczanowski, Mém. l'Acad. Imp. Sci. St. Petersb., Ser. VII., Vol. XXXIX., p. 947, 1893; Kwartland, Trans. Roy. Soc. South Austr., Vol. XXII., p. 161, 1898; Buturlin, Emu, Vol. XI., p. 97, 1911; Mathews, Nov. Zool., Vol. XVIII., p. 220, 1912.

Numenius minor S. Muller, Verh. Nat. Gesch. Land u. Volckend., p. 110, 1841 (Amboina); Temminck and Schlegel, Fauna Japonica, Aves, p. 111, pl. 67, 1849; Masters, Proc. Linn. Soc. N.S.W., Vol. I., p. 61, 1876; Ramsay, *ib.*, Vol. II., p. 198, 1878; *id.*, Tab. List Austr. Birds, p. 20, 1888; Legge, Austr. Assoc. Adv. Sci., Vol. IV., p. 962, 1892; North, Birds County Cumberl., p. 111, 1898.

Mesoscolopax minutus Sharpe, Cat. Birds Brit. Mus., Vol. XXIV., p. 371, 1896; Hall, Key Birds Austr., p. 84, 1899; Campbell, Nests and Eggs Austr. Birds, p. 806, 1901; Berney, Emu, Vol. II., p. 213, 1903; Carter, *ib.*, Vol. III., p. 176, 1904; Berney, *ib.*, Vol. IV., p. 47, 1904; Hall, Key Birds Austr., p. 84, 1906; Berney, Emu, Vol. VI., p. 113, 1907; Mathews, Handl. Birds Austral., p. 26, 1908; *id.*, Emu, Vol. IX., p. 55, 1909.

DISTRIBUTION. East Siberia (breeding?), migrating southwards to Australia in winter.

Adult male. Upper-parts dark brown with white or rufous spots on the margins of the feathers; some of the long upper tail-coverts regularly barred with grey; the small marginal-coverts round the bend of the wing very dark brown like the bastard-wing and primary-coverts; median and greater coverts similar to the back; primary-quills dark brown, shaft of first primary white, some of the inner-quills fringed with white at the tips; secondaries pale brown slightly tipped with white, the long innermost secondaries like the back; crown of head brown spotted with white or buff with a scarcely-defined mesial streak; lores, eyebrow, ear-coverts, and sides of face buff minutely streaked with brown; hind-neck brown with pale margins to the feathers; throat whitish; lower-throat and fore-neck buff with

* The plate is lettered *Numenius minutus*.



J G Keulemans, del

Witherby & Co

$\frac{2}{5}$
NUMENIUS MINUTUS.
(*LITTLE WHIMBREL*).

LITTLE WHIMBREL.

dark shaft-streaks, becoming coarser on the breast and sides of the body where the feathers are barred with brown; middle of abdomen inclining to white; the long under tail-coverts buffy-white barred with brown like the axillaries and under wing-coverts; bill blackish-brown, base of lower mandible flesh-colour; iris blackish-brown, tarsi and feet lead-grey. Total length 333 mm.; culmen 43, wing 182, tail 68, tarsus 50.

Adult female. Similar to the male but slightly larger: culmen 48, wing 184, tail 75, tarsus 53.

Nest and Eggs. Undescribed.

“Breeds evidently on upper Yana (near Verkhojansk, about $67\frac{1}{2}^{\circ}$ N.) and middle Lena. Not further south than about 59° N.”*

MR. J. P. ROGERS found this species far from rare in North-west Australia. They were often found in flocks with *Limnocinclus acuminatus*. None were seen after February.

Mr. Tom Carter writes: “It may be only coincidence, but the only occasions on which the Little Whimbrel came under my notice were in drought periods. In the summer of 1890 many small flocks were seen about Point Cloates mostly on salt marshes, and I observed several that had been killed by flying against wire fences. Their next appearance was in 1896 when a drought also reigned. Many were seen and some shot in the months of September and October.”

“While strolling along the path on the top of the cliffs near our house [Chefoo, North China] I observed a small Curlew on an earthy mound in the grass, under the wall of the old Consulate enclosure. As we drew near it flew off, uttering a loud ‘teo, teo,’ somewhat like the notes of the Greenshank but with a little of the Curlew wail in it. It flew round about, and perched near again, until again disturbed.”†

Styan (*Ibis*, 1891, p. 508): “Passes Shanghi in April. I shot a single one at Kiukiang, 30th September.”

“On the open plains near Derby [North-west Australia] these birds were often noticed. Their mode of flight against the wind closely resembles that of the domestic Pigeon. In alighting on the ground they immediately become very active in their search for food, which consists of insects, especially grass-hoppers and a few small seeds.”‡

“In 1899, although arriving at Clare Valley [North Queensland] early in November, they were not numerous till past midsummer. By the end of January flocks of 20 or 30 might be seen and these increased by 6th March to flocks of seven or eight hundred. By 6th April they had all gone again.

* Buturlin, *Emu*, Vol. XI., p. 97, 1911.

† Swinhoe, *Ibis* 1875, p. 132.

‡ Keartland, *Trans. Roy. Soc. S. Austr.*, Vol. XXII., p. 161, 1898.

THE BIRDS OF AUSTRALIA.

During the past summer they did not show up at all till 3rd April, when they suddenly appeared in thousands at one of the Maxwelton (near Richmond) dams. They were everywhere, in the air and on the ground, and as I rode among them kept rising to get out of my way like a plague of grasshoppers. They remained but a couple of days and then left entirely. Their cry, which is very noticeable, sounds like 'Whai-ut,' 'Whai-ut' uttered loudly and boldly."*

"I estimated there were between two and three thousand on an open lagoon [North Queensland] on 9th February, 1903, which number came down to seven hundred a week later, and by the end of the month was reduced to *nil*. The following spring I only saw five and twenty, and these were distributed between the 17th and 30th October, with no further record till 6th March, 1904, when a solitary bird passed overhead, calling. The big lot I watched with my glasses. It was a most interesting scene; they were crowded down on to the water's edge, the birds on the outskirts being pushed into the water. They were all busily engaged preening their feathers, evidently having fed, keeping up the while a constant chattering as they pecked at one another in their endeavours to find elbow (or rather wing) room."†

"A migrant, that observations show arrives here [North Queensland] sometimes as early as 19th September, but as a rule not till October. In 1904 it did not put in appearance till 10th November, while the springs of 1901 and 1902 were both blank as far as concerns the Little Whimbrel, for I saw nothing of them till the autumns of those two seasons, when the birds were making north again.

"During the season 1900-1901 I did not see them at all. They leave the Richmond district to return to their nesting-grounds, somewhere in north-east Asia, in March or April, the 3rd of the latter month being the latest date upon which I have seen them here.

"There is a difference between the spring and autumn migrations as the birds pass here. In the former they are represented by single individuals and small parties, but in the autumn they come along in flocks of hundreds, often thousands.

"I have in my diary two exceptionally late dates upon which I have seen Little Whimbrels—12th April, 1896, and 23rd April, 1905, but as they were solitary birds in each instance, I expect they had been unable on account of sickness or wounds, to follow their mates in the general exodus that took place some weeks earlier. Under date 14th March, 1905, I have a note as follows: '10.30 p.m., bright moonlight night, large numbers of these birds

* Berney, *Emu*, Vol. II., p. 213, 1903.

† *id.*, *ib.*, Vol. IV., p. 47, 1904.

LITTLE WHIMBREL.

passing at no great height overhead, all going N.W.' Their cry of 'Whai'ut, whai'ut' is easily recognisable."*

The bird figured and described is a male collected on Parry's Creek, North-west Australia, on December 7th, 1908, by Mr. J. P. Rogers.

This beautiful little bird was first described by Gould and later on the same year Salomon Muller also named it. Since that date it has received no other name.

* Berney, *Emu*, Vol. VI., p. 113, 1907.

GENUS—L I M O S A .

LIMOSA Schaeffer, Mus. Ornith., p. 52, 1789	..	..	Type	<i>L. limosa.</i>
<i>Limicula</i> Vieillot, Analyse nouv. Ornith., p. 56, 1816	..	..	Type	<i>L. limosa.</i>
<i>Gambetta</i> Koch, Syst. baier. Zool., pp. xlii., 307, 1816	..	..	Type	<i>L. limosa.</i>
<i>Fedoa</i> Stephens, in Shaw's Gen. Zool., Vol. XII., pt. I., p. 70, 1824	..	..	Type	<i>L. fedoa.</i>
<i>Actites</i> Billberg, Synops. Faunæ Scand., Vol. I., pt. 2, tab. A, and page 153, 1828	..	..	Type	<i>L. limosa.</i>

LARGE Scolopacine Wading-birds with very long straight bills, long wings, very long legs, and long toes.

The culmen is very long and straight but with a faint upward tendency towards the tip; the tip is slightly expanded and projects beyond the lower mandible but it is not curved down over the latter. A slight vertical compression is noticeable towards the tip of the upper mandible. Nostrils are linear and placed near the base of the culmen, in a groove which extends the length of the bill until stopped by the expanded tip. In the lower mandible a similar groove is observed, quite as distinct as that in the upper, while the tip is similarly expanded. The culmen is longer than the tail or tarsus. Wings long with first primary longest. Tail rounded or almost square, longer than the tarsus but less than half the length of the wing. The legs are very long; the exposed portion of the tibia being longer than the middle toe; the metatarsus is very long, being more than one third the length of the wing and more than twice that of the middle toe; it is regularly scutellated both before and behind. The outer and middle toes are connected by a web at the base, but only the indication of a web exists between the middle and inner one. Hind toe long. The claw of the middle toe is peculiar, being very long, linear, fragile, and strongly pectinate; it is more than one-fourth and almost one-third the length of the middle toe.

The preceding diagnosis covers *Limosa limosa* (Linné) but is not applicable to *Scolopax lapponica* Linné, which has been considered by most writers absolutely congeneric. While these Scolopacine Wading-birds have been much sub-divided, especially as regards the smaller forms, these two have

LIMOSA.

been continually regarded as showing identical structural features. This is not so, however, as a careful comparison proves that they differ from each other in exactly the same way as most other Scolopacine genera do.

If the points be comparatively set out the differences will be easily appreciated :—

Limosa limosa (Linné). Bill almost straight, very little upturned and slightly flattened towards the tip, with longitudinal groove well marked the entire length of the upper mandible.

Limosa limosa (Linné). Legs very long ; the exposed portion of the tibia exceeds the middle toe in length while the metatarsus is more than twice the middle toe and more than one-third the length of the wing.

Limosa limosa (Linné). The metatarsus regularly scutellate both before and behind.

Limosa limosa (Linné). The claw on the middle toe is long, linear, fragile and strongly pectinate, and is about one-third the length of the middle toe.

Scolopax lapponica Linné. Bill shorter and more slender and distinctly upturned, much flattened at the anterior half which causes the longitudinal groove to become obsolete on that part of the upper mandible.

Scolopax lapponica Linné. Legs short ; the exposed portion of the tibia less than the middle toe ; the metatarsus less than twice the middle toe and much less than one-third the length of the wing.

Scolopax lapponica Linné. The metatarsus irregularly scutellate, the scutella towards the tibio-tarsal joint being broken up into hexagonal scales.

Scolopax lapponica Linné. The claw on the middle toe is normal, short and untoothed and only one-fourth, or less, the length of the middle toe.

When Kaup differentiated the Waders and introduced generic names for almost all of the species, he also separated these two, restricting *Limosa* to the former and utilising *Limicula* of Vieillot for the latter. Vieillot however had named *L. limosa* (Linné) as the sole species of his *Limicula* upon the first introduction of that genus. Kaup's alteration cannot be accepted. The included cuts will explain the difference most readily.

THE BIRDS OF AUSTRALIA.



Fig. 3.

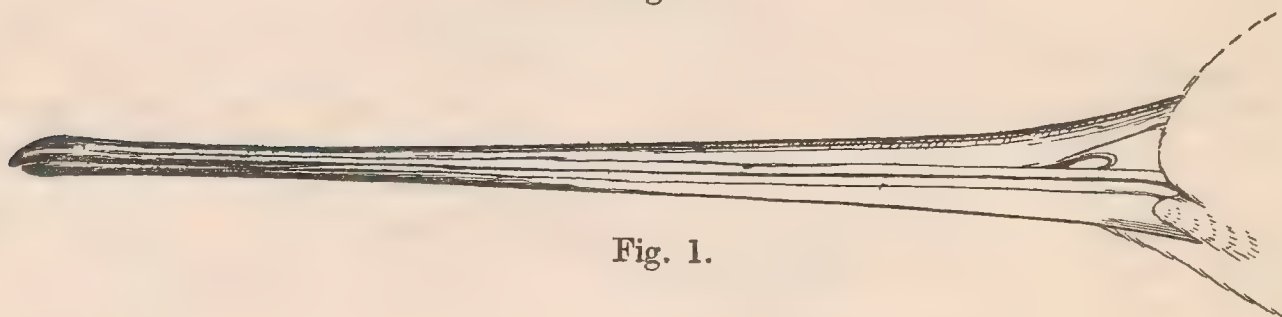


Fig. 1.

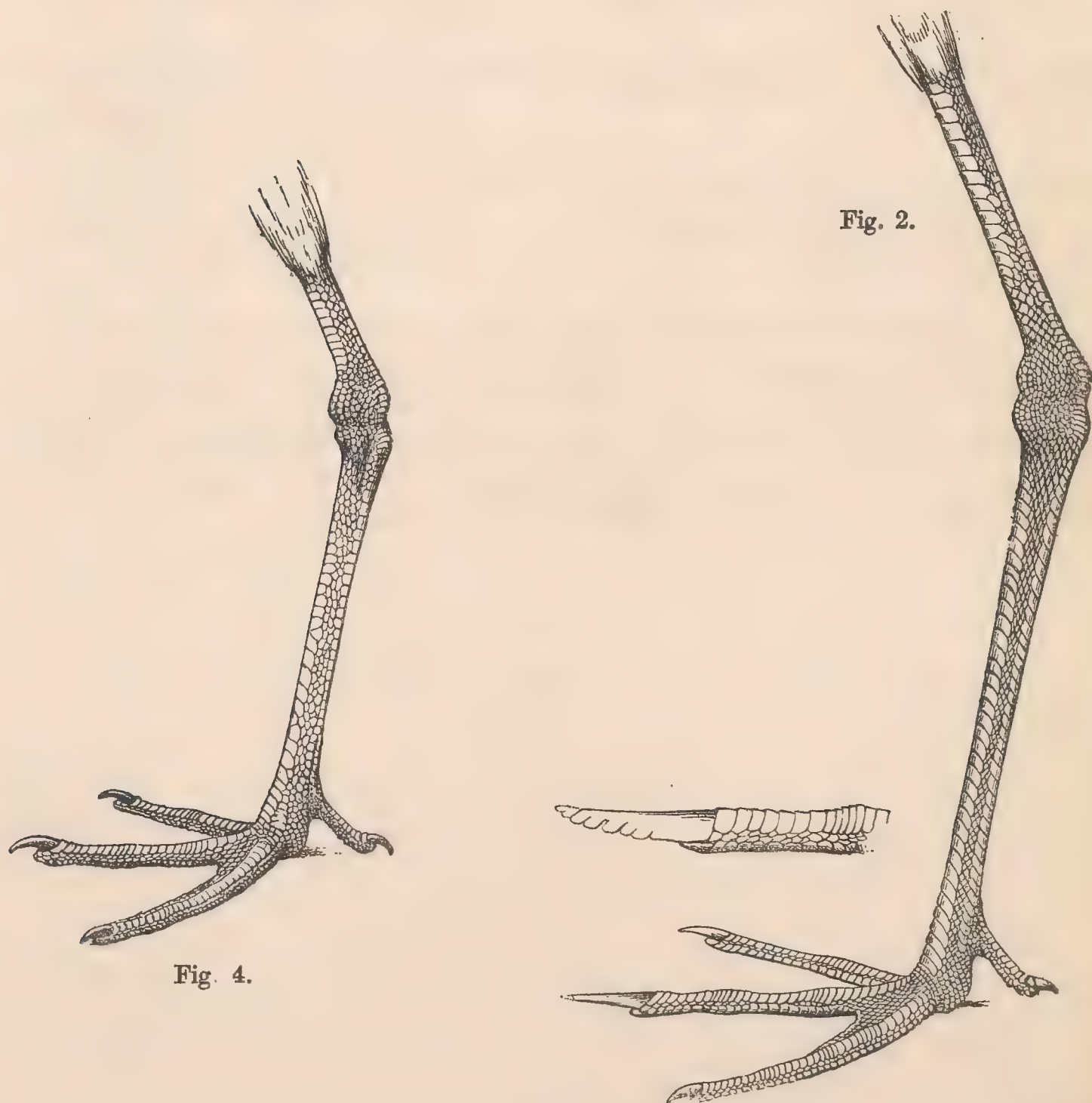


Fig. 2.



Fig. 4.

Figs. 1 and 2, *Limosa limosa*.

Figs. 3 and 4, *Limosa baueri*.



J. G. Kulemans, del.

Witherby & Co.

$\frac{3}{5}$

LIMOSA MELANUROIDES.
(EASTERN BLACK-TAILED GODWIT).

LIMOSA LIMOSA MELANUROIDES.

EASTERN BLACK-TAILED GODWIT.

(PLATE 147.)

LIMOSA MELANUROIDES Gould, Proc. Zool. Soc. (Lond.) 1846, p. 84; Port Essington.

Limosa ægocephala (not Linné) Pallas, Zoogr. Rosso-Asiat., Vol. II., p. 178, 1827; Middendorff, Sibirische Reise, Vol. II., p. 218, 1851; Radde, Reisen Suden von Ost-Sibir., p. 331, 1863; Swinhoe, Ibis 1882, p. 121.

Limosa melanuroides Gould, Proc. Zool. Soc. (Lond.) 1846, p. 84; *id.*, Birds Austr., Vol. VI., pl. 28, 1846; *id.*, Handb. Birds Austr., Vol. II., p. 251, 1865; Ramsay, Proc. Linn Soc. N.S.W., Vol. II., p. 198, 1878; *id.*, Tab. List Austr. Birds, p. 20, 1888; Legge, Proc. Austr. Assoc. Adv. Sci., Vol. IV., p. 944, 1892; Mathews, Emu, Vol. IX., p. 28, 1909; Buturlin, *ib.*, Vol. XI., p. 97, 1911.

Limosa melanura (not Leisler) Temminck and Schlegel, Fauna Japonica, Aves, p. 113, 1849.

Limosa brevipes (not Gray) Schlegel, Mus. Pays-Bas, Vol. V., Scolopaces, p. 21, 1864; Salvadori, Ornith. Papua. e Mol., Vol. III., p. 328, 1882.

Limosa ægocephala melanuroides Stejneger, Bull U.S. Nat. Mus., No. 29, pp. 316, 338, 1885.

Totanus melanurus melanuroides Seebohm, Hist. Brit. Birds, Vol. III., p. 163, 1885.

Limosa limosa melanuroides Stejneger, Proc. U.S. Nat. Mus., Vol. X., p. 131, 1887; Mathews, Nov. Zool., Vol. XVIII., p. 221, 1912.

Limosa melanura melanuroides Seebohm, Geogr. Distr. Charadr., p. 391, 1887.

Limosa melanura brevipes Campbell, Ibis 1892, p. 246; Taczanowski, Mém. l'Acad. Imp. Sci. St. Petersb., Ser. VII., Vol. XXXIX., p. 929, 1893.

Limosa limosa Sharpe, Cat. Birds Brit. Mus., Vol. XXIV., p. 381, 1896 (pars); Campbell, Nests and Eggs Austr. Birds, p. 809, 1901; Hall, Key Birds Austr., p. 84, 1906; Mathews, Handl. Birds Austral., p. 26, 1908; *id.*, Emu, Vol. IX., p. 3, 1909.

DISTRIBUTION. Siberia (breeding), migrating southwards to northern Australia in winter.

Adult male, in summer-plumage. Head and hind-neck cinnamon-rufous, the feathers centred with brown, more strongly pronounced on the crown of the head; upper-back and scapulars blackish-brown, barred and margined with rufous; marginal upper wing-coverts dark brown, as also the bastard-wing; some of the median coverts blackish with pale margins, greater coverts brown, broadly tipped with white; primary-coverts blackish edged with white at the tips, more broadly on the inner ones; primary-quills dark brown on the outer webs and at the tips,

THE BIRDS OF AUSTRALIA.

inner webs much paler and becoming white towards the base, some of the inner primaries entirely white at the base; secondaries white tipped with brown, the latter colour becoming very pale and almost white towards the inner ones, the long innermost secondaries greyish-brown and blackish, with rufous spots on the margins; lower-back uniform dusky-brown; upper tail-coverts white, the long ones tipped with black; tail white at the base, the white increasing in extent on the outer feathers which are black at the tips, the black much more extended on the middle feathers, which are slightly edged with white at the tips; throat and a line from the base of the bill to the eye white; a small crescent-shaped white line immediately below the eye; lores, sides of face, and ear-coverts cinnamon-rufous minutely streaked with blackish like the fore-neck and sides of neck, somewhat darker in colour on the latter; breast similar in colour to the fore-neck but barred with brown, more broadly on the sides of the breast and sides of body; middle of abdomen, vent and under tail-coverts white barred with brown, some of the latter barred and margined with black; axillaries and under wing-coverts pure white, the lesser coverts round the margin of the wing dark brown or blackish, bill—distal half of mandible brown, shading to pale brown at the base of upper mandible and greyish white at base of lower mandible; iris brown; tarsi and feet olive-brown. Total length 360 mm.; culmen 73, wing 190, tail 71, tarsus 65.

Adult female. Similar to the adult male, but larger.

Adult male, in winter-plumage. Head, hind-neck, and sides of neck ash-grey, with a wash of rufous on the fore-part of the head; back, scapulars, and lesser marginal wing-coverts dark greyish-brown; lower-back dark brown with pale narrow margins to the feathers; upper tail-coverts white, the long ones tipped with black; tail white at base and black at the tip, the latter colour more pronounced on the middle feathers, and the former more extended on the outer ones; median and greater wing-coverts fringed with white at the tips more broadly on the latter; bastard-wing, marginal coverts, and primary-coverts blackish; quills blackish on the outer webs and at the tips, with white shafts for the greater part of their length, inner webs paler brown and becoming entirely white at the base of the inner ones; secondaries white with brown tips, on some of the feathers the brown is restricted to the inner-web; the long innermost secondaries greyish-brown like the back; a pale line from the base of the bill over the eye; a small crescent white line immediately below the eye; chin whitish; throat, fore-neck, chest, and sides of body ash-grey; abdomen and under tail-coverts white, the latter margined with black; axillaries and under wing-coverts pure white, the small marginal coverts round the bend of the wing dark brown edged with white.

Immature male. Top of head dark brown, the feathers margined with buff; sides of face and neck all round grey, the latter washed with rufous; upper-back and scapulars dark brown, the feathers everywhere margined with buff; the marginal upper wing-coverts, bastard-wing, and primary-coverts blackish, some of the latter tipped with whitish; median wing-coverts dark brown with grey edges, the major coverts broadly tipped with white; primary-quills are much the same in colour as the summer- and-winter birds described above; the long innermost secondaries differ from the winter-plumage in being dark with rufous or sandy-buff margins; lower-back blackish with slightly paler margins to the feathers; upper tail-coverts and tail also similar, but differ in having dusky tips to the latter; throat whitish; lower-breast, abdomen and under tail-coverts white, washed with grey.

Nest. A depression in the grass.

Eggs. "Clutch four; surface not glossy; ground-colour pale olive-green to pale yellowish, covered all over with small spots of a more or less olive-brown; some on the larger end being of an indistinct olive-grey to reddish-grey. Dimensions: Axis 51-2 to 55 mm.: diameter 35 to 37." (Taczanowski.)

EASTERN BLACK-TAILED GODWIT.

Breeding-season. July (Siberia, Middendorff).

“Breeds in Eastern Siberia as far south as Kamchatka (perhaps Commander Islands) shores of Okhotsk Sea, Baikal, and as far west as upper Yenisei Valley (rare).”*

MR. J. P. ROGERS found these birds very wild and not plentiful in the North-west of Australia.

Captain S. A. White saw some on the Capricorn Island, off Queensland, in company with *L. baueri*.

Mr. J. W. Mellor shot a specimen at the above islands. In their habits they were the same as the next species, and rather wary of approach, especially when the tide was out, at which time they came to feed on the shore.

Middendorff (*Sibirische Reise*, p. 218, 1851) found them nesting on the Great Schantar Island, and by August 11th the young were fully grown.

Radde (*Reisen Suden von Ost-Sibir.*, p. 331, 1863), says: “When large flocks of this bird arrived on the Tarei Nor on May 12th, 1856, they were so shy that we could not approach within gunshot of them. In a flock which numbered over one hundred, pairs of birds were observed in fierce combat; probably the males fighting for the females. The birds soon disappeared, and were not again noticed on the Tarei Nor during the summer. In the autumn they returned in large numbers. They assembled round Altansk on July 30th, with their young which were not grown enough for the migration.

“On July 31st, large flocks were found on the shores of Lake Dshindagatai. On August 12th they migrated from the Tarei Nor. Although this bird has not been recorded from Amurland there can be no doubt that it visits that district.”

The bird figured and described is a male, collected at Parry's Creek, North-west Australia, on November 6th, 1908, by Mr. J. P. Rogers.

Though most careful workers had recognised the differences between the Eastern and Western forms of *Limosa limosa*, Sharpe, in the *Cat. Birds Brit. Mus.*, Vol. XXIV., p. 381, 1896, lumped them, stating that though the differences mentioned by previous authors were observed by him, he did not deem it necessary to recognise the Eastern bird even as a subspecies.

Receipt of specimens from North-west Australia induced me to make comparisons, and in the *Emu*, Vol. IX., 1909, pp. 3 and 28, I rejected Sharpe's conclusion and would here give some of the data obtained.

The majority of specimens in the British Museum came from India, being part of the unrivalled Hume collection. These undoubtedly show both races, but if the whole of the birds from Europe and Africa were sorted out

* Buturlin, *Emu*, Vol. XI., p. 97, 1911.

THE BIRDS OF AUSTRALIA.

and all the specimens from the Far East and Australia be compared, the differences between the two subspecies are well marked.

No specimen from the West has a culmen smaller than 100 mm., while all, save one from the Far East, have the culmen under 95 mm. The other measurements are also smaller : thus typical birds have the wing over 210 mm., the tarsus over 75 mm., whereas the Eastern ones very rarely go over 200 mm. in the wing and the tarsus rarely reaches 70 mm.

If the averages be taken the discrepancies become more marked thus :—

Twelve specimens, selected at random, from Europe and Africa.

CUL.	WING.	TARS.	MIDDLE TOE.
115	220	84	35

Ten specimens, selected at random, from China, Japan, and Australia.

CUL.	WING.	TARS.	MIDDLE TOE.
86	195	66	32

GENUS—V E T O L A , nov.

Type *Scolopax lapponica* Linné.

THIS genus, which has been continually confused with *Limosa*, is as well characterised as the majority of the *Scolopacine* genera. It is easily distinguished by its short legs, differing much in the same way as *Pseudototanus* differs from *Glottis*. Compared with *Limosa* the bill is proportionately shorter and more slender and distinctly more upturned; the groove on the upper mandible becomes obsolete at about three-quarters the length of the culmen owing to the strong vertical compression of the upper mandible, the groove on the lower mandible however persists as in *Limosa*. The legs are short, the exposed tibia being less than the length of the middle toe, the metatarsus is less than twice the middle toe and also less than one-third the length of the wing, the scutellation of the front of the metatarsus becomes irregular and broken up into hexagonal scales towards the tibio-tarsal joint, whereas in *Limosa* the scutellation is quite regular. The middle claw is normal, untoothed and short, being one-fourth, or less, the length of the middle toe.

VETOLA LAPPONICA BAUERI.

(PLATE 148.)*

EASTERN BARRED-RUMPED GODWIT.

LIMOSA BAUERI Naumann, Vögel Deutschl., Vol. VIII., p. 429, 1836 ; Victoria.*Limosa baueri* Naumann, Vögel Deutschl., Vol. VIII., p. 429, 1836 ; Buller, Birds New Zealand, p. 198, 1873 ; Salvadori, Ornith. Papua. e Mol., Vol. III., p. 329, 1882.*Limosa brevipes* Gray, List Spec. Birds Brit. Mus., pt. III., p. 95, 1844 (n.n.).*Limosa australasiana id.*, *ib.*, p. 96 (n.n.)*Limosa lapponica*, var. *Novæ-zealandiæ id.*, Voy. "Erebus" and "Terror," p. 13, 1846 (New Zealand).*Limosa novæ-zealandiæ id.*, Gen. Birds, Vol. III., p. 570, 1847 ; Buller, Trans. New Zeal. Inst. 1877, Vol. X., p. 195, 1878 ; *id.*, Birds New Zeal., 2nd. ed., Vol. II., p. 40, 1888 ; Legge, Proc. Austr. Assoc. Adv. Sci., Vol. IV., p. 943, 1892 ; Sharpe, Cat. Birds Brit. Mus., Vol. XXIV., p. 377, 1896 ; North, Birds County Cumberl., p. 111, 1898 ; Hall, Key Birds Austr., p. 84, 1899 ; Campbell, Nests and Eggs Austr. Birds, p. 808, 1901 ; Carter, Emu, Vol. III., p. 176, 1904 ; Hall, Key Birds Austr., p. 84, 1906 ; Sharpe, Hist. Coll. Brit. Mus., Birds, p. 147, 1906 ; Mathews, Handl. Birds Austral., p. 26, 1908 ; Ogilvie-Grant, Ibis 1910, p. 180 ; Littler, Handb. Birds Tasm., p. 138, 1910 ; Campbell and White, Emu, Vol. X., p. 199, 1910.*Limosa uropygialis* Gould, Proc. Zool. Soc. (Lond.) 1848, p. 38 (Victoria) ; *id.*, Birds Austr., Vol. VI., pl. 29, 1848 ; *id.*, Handb. Birds Austr., Vol. II., p. 252, 1865 ; Swinhoe, Ibis 1870, p. 362 ; *id.*, *ib.* 1873, p. 368 ; Diggles, Handb. Birds Austr., Vol. II., pl. 99, 1877 ; Ramsay, Proc. Linn. Soc. N.S.W., Vol. II., p. 198, 1878 ; *id.*, *ib.*, Vol. VII., p. 88, 1882 ; *id.*, Tab. List Austr. Birds, p. 20, 1888.*Limosa foxii* Peale, U.S. Expl. Exp., Zool., p. 231, 1848 (*cf.* 2nd ed., p. 314, 1858) ; Samoan Group.*Limosa rufa* (not Temminck) Temminck and Schlegel, Fauna Japonica, p. 114, 1849 ; Middendorff, Sibirische Reise, Vol. II., p. 217, 1851.*Limosa lapponica* (not Linné) Cassin, Proc. Acad. Nat. Sci. Philad. 1858, p. 196.*Limosa lapponica rufa* Swinhoe, Ibis 1861, p. 410.*Limosa lapponica novæ-zealandiæ* Ridgway, Proc. U.S. Nat. Mus., Vol. III., p. 200, 1880 ; Baird, Brewer, and Ridgway, Water Birds of N. Amer., Vol. I., p. 258, 1884 ; Buturlin, Emu, Vol. XI., p. 97, 1911.*The Plate is lettered *Limosa baueri*.



$\frac{1}{2}$
LIMOSA BAUERI.
(*BARRED-RUMPED GODWIT*).

Witherby & Co.

J. C. G. G. G. G.

EASTERN BARRED-RUMPED GODWIT.

Limosa lapponica baueri Stejneger, Bull U.S. Nat. Mus., No. 29, p. 122, 1885 ; Taczanowski, Mém. l'Acad. Imp. Sci. St. Petersb., Ser. VII., Vol. XXXIX., p. 933, 1893 ; Mathews, Nov. Zool., Vol. XVIII., p. 220, 1912.

Limosa lapponica uropygialis Seebohm, Hist. Brit. Birds, Vol. III., p. 157, 1885.

Totanus rufus uropygialis id., ib., p. xxiv.

Limosa rufa uropygialis Taczanowski, Bull Soc. Zool. France, Vol. X., p. 475, 1885 ; Seebohm, Georg. Distrib. Charadr., p. 387, 1887.

DISTRIBUTION. Siberia (breeding), migrating southward to Australia, New Zealand, and the islands in winter.

Adult male, in summer-plumage. Head and hind-neck cinnamon-rufous with dark brown shaft-streaks to the feathers : upper-back and scapulars dark with white and buff marginal spots to the feathers ; the feathers of the lower-back pale brown fringed with white—these edgings becoming rufous on the short upper tail-coverts, the long ones barred with rufous and brown and tipped with white ; tail pale brown barred and tipped with white ; lesser, median, and greater wing-coverts brown, fringed with white ; bastard-wing and primary-coverts uniform dark brown ; primary-quills also dark brown, paler on the inner-webs and mottled with white towards the base, the shafts conspicuously white ; the inner primaries and secondaries pale brown and edged with white ; tail brown, tipped and barred with white ; a short white line immediately below the eye ; eyebrow, throat, breast, abdomen, and under tail-coverts cinnamon-rufous, some of the under tail-coverts have dark brown bars ; under wing-coverts white with a subterminal brown bar ; axillaries white barred with brown ; bill blackish, pale at base of lower-mandible ; iris brown ; feet blackish. Total length 373 mm. ; culmen 83, wing 224, tail 78, tarsus 51.

Adult female. Similar to the male, but larger.

Adult male, in winter-plumage. Top of head and hind-neck ash-grey with narrow pale brown streaks to the feathers becoming darker on the back and scapulars, some of the feathers of which are dark brown fringed with white ; upper tail-coverts brown barred and fringed with white, the long ones barred with brown and white ; tail dark brown mottled with white towards the base, some of the middle feathers subterminally barred with white, the shafts of the feathers white at the base and brown near the tips ; lesser, median, and greater wing-coverts pale brown with whitish margins like the secondary-quills ; bastard-wing and primary-coverts uniform dark brown ; primary-quills dark brown on the outer-webs and at the tips, paler brown on the inner-webs and mottled with white towards the base, the shafts conspicuously white ; an ill-defined white eyebrow ; sides of face dusky white with minute dark shaft-lines, an indistinct line in front of the eye and the ear-coverts a shade darker than the rest of the face ; a narrow white line immediately below the eye ; throat dull white ; lower-throat and breast ash-grey with narrow blackish shaft-lines on the lower-throat and fore-neck ; the feathers of the breast, sides of body, and under tail-coverts more or less barred with pale brown ; abdomen and vent whitish ; axillaries brown, barred and margined with white ; under wing-coverts pale brown barred and margined with white.

Nest. A depression in the grass.

Eggs. "Clutch, four. Ground colour deep greenish drab to pale drab ; the markings are scattered in the form of irregular blotches of a dilute umber. In some the markings are more pronounced and more aggregated towards the larger end and of a much deeper shade of umber. Axis 57 mm. ; diameter 36-37." (Baird, Brewer, and Ridgway.)

THE BIRDS OF AUSTRALIA.

"Ground colour deep greenish, with dark spots scattered all over the surface ; 56 mm. by 38." (Middendorff.)

Breeding-season. In Siberia, June and July (Middendorff).

"Breeds in Eastern Siberia as far North as Taimyr Peninsula and tundras at the mouth of Kolyma. Breeds in colonies, and is very noisy. I brought back some downy young. Seems not to breed in the region of true '*taiga*.'" *

CAPTAIN S. A. WHITE writes : "These birds are seldom seen in South Australia but on the Capricorn Islands, Queensland, I procured examples and was much struck by the difference in the length of the bill in the male and female. Many were noticed in these Islands, and fresh ones arrived each day, so poor and weak after their long fly from the north, that they would allow themselves to be handled. They were noticed to leave the wet sand on the beach and walk about on the dry sand above high water mark, thrusting their long bills into the sand, apparently after a white and red crab which I unearthed, also large sand-hoppers."

Mr. J. W. Mellor reports : "They walk about quickly, all the time thrusting their long needle-like bill into the water and sand and apparently getting plenty of food."

Mr. Tom Carter records : "The Barred-rumped Godwit occurred in small flocks at certain places on the beach near Point Cloates. Specimens were shot there as late as May 27th, 1898. The earliest noted date of arrival was the 22nd of October."

"Not very plentiful [Near Sydney]. Sometimes obtained at the mouth of Cook's River, or on the shores of Botany Bay. The note of this species may be heard at night at Ashfield, as it passes over from its feeding-grounds on the flats of the Parramatta River, to those at Botany."†

"A pair were shot out of a party of Godwits feeding in the shallows of the creek at Hungpe [N.W. Hainan off China] on the 30th of March ; these are nearly in full summer plumage. Later, on the 2nd of April, a solitary bird was picked off the sandy shore of Hoehow harbour ; this is in winter dress."‡

"The Pacific Bar-tailed Godwit is a regular visitor to the Commander Islands during the migratory seasons. In 1883 I observed the first ones on the 10th of May on the sandy beach at Fedoskija, Bering Island, and specimens were obtained again during the latter part of September. While on Copper Island, in 1883, I saw one solitary bird at Glinka, about the middle of July, and another at Pestschanii on the 30th of the same month, so that it may be that a few remain to breed. It is, however, not uncommon among arctic waders

* Buturlin, *Emu*, Vol. XI., p. 97, 1911.

† North, *Birds County Cumberl.*, p. 111, 1898.

‡ Swinhoe, *Ibis* 1870, p. 362.

EASTERN BARRED-RUMPED GODWIT.

that individuals, not disposed to breed, stay at some more southerly locality during the whole summer.”*

“Towards the end of March or beginning of April large flocks may be seen at the far north taking their departure from our country [New Zealand]. The departure from any fixed locality usually begins on almost the exact date year after year, and for a week or ten days after the migration has commenced fresh parties are constantly on the wing, the flight generally taking place about sunset, and sometimes after dark. The main body fly in silence, but the straggling birds cry out at intervals, while endeavouring to overtake the flock in advance. Near the North Cape, Captain Mair has observed them flying northwards in tens of thousands, and always in considerable flocks, numbering from 700 to 1,200 birds in each, and the wonder is where they all come from. During the period mentioned, this excitement of departure is unabated—flocks forming and following each other in perpetual succession.

“On their return to this country they do not make a sudden appearance, but come in straggling parties during the month of October, and generally become more plentiful after the first week in November and about Christmas they are in full force again all along our sea-shore.

“Sometimes the birds may be seen thrusting their long pliant bills deep into the mud or sand, working them to the very hilt, and sometimes burying the fore-part of the head in the soft ooze, at another time they may be seen taking three or four hurried steps forward, and then halting for a moment to pick up some object from the surface; but generally speaking they walk along with much deliberation, picking as they go.

“While resting on sand-banks at high tide, they always stand in the water so as to conceal the unfeathered tibia.”†

Middendorf (*Sibirische Reise*, p. 217, 1851) found them breeding in great numbers on the River Taimyr (74° North lat.) where they arrived on June 3rd: “The male and female can be distinguished at a distance not only on account of their size, but also on account of their colour.” After mentioning some structural characters whereby the male and female can be differentiated, he goes on to say they nest on the high tundras on the Taimyr. It was not easy to find the eggs as, while anyone approaching them was still at a distance, the birds, especially the males, flew towards him with a great commotion, so that the nest could not be located, like those of other Waders. By the end of June there were two to three eggs in a nest. On August 11th the last birds of this species were seen (75° North lat.).

* Stejneger, *Bull U.S. Nat. Mus.*, No. 29, p. 123, 1885.

Buller, *Birds New Zeal.*, 2nd ed., Vol. II., p. 42, 1888.

THE BIRDS OF AUSTRALIA.

The eggs of the northern birds are oval, and measure 56 mm. long by 38 wide.

The bird figured and described is a female, and was collected in New South Wales.

Regarding the differences and nomenclature of the Eastern Bar-tailed Godwit, Stejneger wrote *l.c.*: "I see no reason for lumping the eastern and western forms of this species together, as they are fairly separable by the darker rump and heavier barred flanks and axillaries of the former. As a rule *baueri* is paler than the typical *lapponica*, but a specimen from Bering Island is fully as deeply coloured as average European specimens, being however the darkest of an extensive series. The name given by Naumann is undoubtedly older than those given by Gray or Gould. It is not a museum-name only, as Naumann, when publishing it, indicated a character by which he thought it separable. That this character afterwards failed, does not invalidate the name; hence there is no good reason for rejecting it."

GENUS—I L I O R N I S .

ILIORNIS Kaup, Skizz Entwick Gesch. Nat. Syst, p. 156,

1829 Type *I. stagnatilis*.

Also spelt *Ilyornis*, *id.*, *ib.*, p. 195.

MEDIUM Totanine Waders with long straight slender bills, very long wings, very long legs with long exposed tibia, and tails of medium length.

The culmen is long and slender, with the tip of the upper mandible hard and not expanded but turned down over the lower mandible; the grooves in both mandibles are short and less than half the length of the culmen. The wings are long and pointed, the first primary longest.

The metatarsus is very long and regularly scutellate both in front and behind and equal to, or more than twice the length of, the middle toe; it is also more than one-third the length of the wing. The exposed tibia is very long, equalling the middle toe in length. The tail is a little longer than the metatarsus. The toes are long and slender with a distinct web between the outer and the middle one, and a scarcely noticeable web between the middle and inner toe. Hind toe present.

The preceding diagnosis is based on the *Totanus stagnatilis* of Bechstein, which is one of the five species included in the *Catalogue* of the Birds in the British Museum in the genus *Totanus*. The diagnosis there given (Vol. XXIV, p. 338) reads :—

Bill straight, the tip of the upper mandible slightly decurved at the tip.

Outer toe joined to the middle one by a distinct web at the base, the inner toe scarcely united to the middle one.

Tarsus much longer than middle toe without claw, being more than one and a half times as long as the toe

Totanus.

Tarsus much shorter and scarcely exceeding the length of the middle toe and claw

Helodromas.

In the genus *Totanus*, Sharpe included *Totanus fuscus* Linné, *melanoleucus* Gmelin, *calidris* Linné, *stagnatilis* Bechstein, and *flavipes* Gmelin. The association of such different birds in one genus seems incapable of explanation, more especially when we find that *T. hypoleucus* and *T. ochropus* are separated. The species *melanoleucus* is so like *Glottis nebularius*, that it was associated with it continually by American authors, and appeared in conjunction with it in the second edition of the American Ornithologists' Union's *Checklist*,

THE BIRDS OF AUSTRALIA.

but has in the third edition been separated apparently in deference to Sharpe's classification. In coloration, size, and every detail the two agree more closely than any other two members of the family, save those unhesitatingly accepted as congeneric—*H. brevipes* and *incanus*.

Sharpe separated *Glottis* (for *G. nebularius* alone) as having the following characters (Vol. XXIV., p. 339):—

Bill with an upward curve.

Inner toe united at the base by a membrane to the middle toe but the outer toe scarcely connected; bill with a distinct upward tendency of the lower mandible, rising from a point a little beyond the terminal half of the latter.

It will be noted that the webbing of the toes is here given as exactly the opposite of that occurring in *Totanus*, and it would seem that American ornithologists, otherwise so very accurate, had omitted to check this item, for on examining the feet of *Glottis nebularius* I find that Sharpe has made an error and that the webbing is normally Totanine.

The only difference I can note between *Glottis nebularius* and "*Totanus melanoleucus*" is that the former has a slightly heavier bill with a more strongly upturned tendency, and slightly shorter. I cannot however see any details that could merit any distinction being even subgenerically made between these two.

Ridgway (*Water Birds N. Amer.*, Vol. I., pp. 266, 267) wrote:—

The only species agreeing closely with the type of the genus *Totanus* (*T. stagnatilis* type [*sic*]) is the American "*Gambetta*" *flavipes* (Gmel.) which differs in having the bill thicker and not at all upturned terminally, and in the much longer primaries with shorter and broader tertials; the latter in *T. stagnatilis* reaching nearly to the end of the longest quills. "*Gambetta*" *melanoleuca* (Gmel.) is like *flavipes* in regard to the wing, but the bill is much thicker and decidedly recurved terminally, while it is also longer in proportion to the tarsus. "*Glottis*" *canescens* is very much like *melanoleuca*, but the same characters which separate the latter from *flavipes* are in this more exaggerated; the resemblance, however, being much closer between *canescens* and *melanoleuca* than between the latter and *flavipes*.

Upon the whole the Wood Sandpipers (*Rhyacophilus*) and the Red-shank (*Erythroscelus fuscus*) seem sufficiently different from the species of *Totanus* to warrant their generic separation:

Totanus: Middle toe not more than half as long as the tarsus; bill decidedly shorter than tarsus.

Erythroscelus: Middle toe about half the tarsus; bill longer than tarsus; lower parts dusky in adult.

The coloration of *T. fuscus* is so remarkably distinct, that the recognition of the genus *Erythroscelus* seems absolutely necessary. In the *Cat. Birds Brit. Mus.* the synonymy of the genus *Totanus* shows carelessness, the type of *Erythroscelus* (written *Erythroscelis*) being given as *T. calidris* though it was introduced for *T. fuscus* alone, and *Iliornis* is altogether omitted though *I. stagnatilis* is included in the synonymy of the species. In addition to its

ILIORNIS.

peculiar coloration, *Erythroscelus* has the bill proportionately longer and more slender than any of the other species included in *Totanus* by Sharpe, while the tarsus is more than one-third the length of the wing and about twice the length of the middle toe.

The genus *Totanus* differs from *Iliornis* as above diagnosed in having a stouter bill and shorter legs. The grooves in the culmen of both mandibles extend more than half the length of the bill, while in *Iliornis* and *Erythroscelus* the metatarsus is less than one-third the length of the wing and less than twice the middle toe.

The species *T. flavipes* seems to fall easily into the genus *Iliornis*.

ILIORNIS STAGNATILIS HORSFIELDII.

LITTLE GREENSHANK.

(PLATE 149.)*

LIMOSA HORSFIELDII Sykes, Proc. Zool. Soc. (Lond.) 1832, p. 163 ; Dukhun, India.

Limosa horsfieldii Sykes, Proc Zool. Soc. (Lond.) 1832, p. 163.

Totanus lathamii Gray and Hardwicke, Ill. Ind. Zool., Vol. II., pl. 51, fig. 3, 1834 (India).

Glottis horsfieldii Gray, List Spec. Birds Brit. Mus., pt. III., p. 99, 1844.

Totanus horsfieldii id., Genera Birds, Vol. III., p. 573, 1846.

Totanus stagnatilis (not Bechstein) Gould, Birds Austr., Vol. VI., pl. 37, 1848 (New South Wales) ; Middendorff Sibirische Reise, Vol. II., p. 214, 1851 ; Radde, Reisen Suden von Ost-Sibir., p. 328, 1863 ; Gould, Handb. Birds Austr., Vol. II., p. 267, 1865 ; Seebohm, Geogr. Distr. Charadr., p. 357, 1887 ; Salvadori, Ornith. Papua. e Mol., Vol. III., p. 324, 1882 ; Ramsay, Tab. List Austr. Birds, p. 20, 1888 ; Legge, Proc. Austr. Assoc. Adv. Sci., Vol. IV., p. 947, 1892 ; Taczanowski, Mém. l'Acad. Imp. Sci. St. Petersb., Ser. VII., Vol. XXXIX., p. 864, 1893 ; Sharpe, Cat. Birds Brit. Mus., Vol. XXIV., p. 422, 1896 ; Hall, Key Birds Austr., p. 84, 1899 ; Keartland, Birds Melb. Distr., p. 116, 1900 (Victoria) ; Campbell, Nests and Eggs Austr. Birds, p. 810, 1901 ; Hall, Key Birds Austr., p. 84, 1906 ; Mathews, Handl. Birds Austral., p. 26, 1908.

Tringa stagnatilis Mathews, Nov. Zool., Vol. XVIII., p. 221, 1912.

DISTRIBUTION. Lower Siberia (breeding), migrating southwards to Australia in winter.

Adult male, in breeding-plumage. Mantle and back ash-grey with dark shaft-lines and arrow-head black blotches ; some of the long scapulars irregularly marked and barred with black, the long innermost secondaries similarly marked ; lesser and greater wing-coverts dark brown, the latter tipped with white ; some of the median coverts blotched with black like the back ; bastard-wing, primary-coverts and quills dark brown, the shaft of the outer primary white, the inner primaries paler and margined with white like the secondaries ; lower-back and rump pure white ; upper tail-coverts and middle tail-feathers white, barred with brown, the outer feathers with irregular dark lines on the outer margins ; head and hind-neck grey, minutely streaked with black ; sides of face, throat, and breast white, sparsely spotted and streaked with black more coarsely on the sides of the breast and sides of body, sometimes taking the form of bars on the latter ; remainder of under-surface white with a few dark narrow streaks on the under tail-coverts ; axillaries and under wing-coverts also white ; lower primary-coverts grey, fringed with white.

* The Plate is lettered *Tringa stagnatilis*.



J G Keulemans, del

Witherby & Co

$\frac{3}{4}$

TRINGA STAGNATILIS.
(LITTLE GREENSHANK).

LITTLE GREENSHANK.

Adult female. Similar to the adult male, but larger.

Adult, in winter-plumage. Differs from the adult in summer-plumage in the absence of the dark arrow-headed black blotches on the feathers of the back, the long secondaries not so conspicuously barred, in having fewer dark striations on the sides of the neck and body, and in having the forehead quite white; bill black, lower base grey; iris brown; feet and legs olive-yellow. Total length 210; culmen 38, wing 146, tail 62, tarsus 53.

Bird of the year. Hinder-crown, hind-neck, mantle, scapulars, and long innermost secondaries ash-grey with dark shaft-streaks and pale margins to the feathers, some of the long innermost secondaries have longitudinal dark lines; wings darker than in the breeding-plumage, as also the lower-back and rump; tail white, mottled with grey on the outer webs and more or less barred on the inner webs of the middle feathers; inner webs of outer feathers pure white; under-surface white.

Nest. A depression in the grass.

Eggs. "Resemble those of *Actitis hypoleucos* but are a little smaller. Clutch four. Surface glossy. Ground colour very pale yellow, sometimes shading to a greenish tint. The spots larger than in those of the species quoted, especially on the larger end, where they often form a kind of irregular zone; in others there are large spots on the smaller end, but never so large as those on the upper end. Dimensions: axis 38 to 39.6 mm., diameter 26 to 28." (Taczanowski.)

Breeding-season. June (Siberia, Godlewski).

"We found it plentiful on the River Argun in Dauria, where it lives around the lakes which lie in the valley of the river, and nests on the steppes at a distance from the water. It arrives in May, lays its eggs in June and sits so closely on them that it will not leave the nest unless almost trodden on, and this is the only way to find them as they are well hidden in the grass, and their colour resembles the surrounding earth. They become very excited if anyone approaches their young; they fly towards the intruder and endeavour to lead him in another direction. We have not observed them anywhere else."*

Middendorff only obtained one specimen of this bird—on July 6th, near the coast of the Sea of Ochotsk.

Radde (*l.c.*) says this species appeared on the Tarei-nor in the beginning of May, where several females were shot. The East Siberian bird seemed to him to be of a larger build.

One of the birds figured and described is a male collected in the Northern Territory in September, 1911.

Eastern specimens in summer-plumage are certainly lighter on the upper-surface, the black markings being less noticeable, while the spotting on the breast and flanks is not so bold; they are probably slightly larger as Radde suggested.

* Godlewski, *Mém. l'Acad. Imp. Sci. St. Petersb.*, Ser. VII., Vol. XXXIX., p. 866, 1893.

GENUS—T R I N G A .

Tringa Linné, Syst. Nat., 10th ed., p. 148, 1758 .. Type *T. ocrophus*.

Also spelt—

Trynga Vroeg. Cat. Rais. d'Ois. Adumb., p. 7, 1764.

Tryngas Gloger, Hand-u-Hilsfb. Naturg., p. 425, 1842.

Helodromas Kaup, Skizz. Entwick-Gesch. Nat. Syst.,
p. 144, 1829 Type *T. ocrophus*.

Also spelt—

Helodroma, *id.*, *ib.*, p. 195.

Helodromus Gray, Genera Birds, Vol. III., p. 572, 1846.

Helodromos Bonaparte, Comptes Rendus Sci. (Paris), Vol. XLIII., p. 597, 1856.

SMALL Totanine Waders with straight bills of medium length, very long wings, short legs, long toes, and medium length tails.

The culmen is straight and of medium length, about equal to the metatarsus; the groove in each mandible is more than half the length of the culmen. The wings are very long and pointed with the first primary longest. The metatarsus is regularly scutellated both in front and behind and is comparatively short; it is less than one-fourth the length of the wing and also less than one and a half times the middle toe. The claws are very long. All the other characters as in *Iliornis*.

The necessity of considering the species *T. ocrophus* to be the type of Linné's genus *Tringa* has been shown by me in the *Nov. Zool.*, Vol. XVIII., p. 5, 1911. It might be noticed too that Seebohm also observed this but rejected it, as he wrote: "It [*T. ocrophus*] is a Totanus";—but *Tringa* surely had the prior claim.



J G Keulemans . del

W. & A. G. & C.

$\frac{3}{4}$

TRINGA OCROPHUS.

(GREEN SANDPIPER.)

TRINGA OCROPHUS ASSAMI.

EASTERN GREEN SANDPIPER.

(PLATE 150.)*

TRINGA OCROPHUS ASSAMI Mathews, Austral Av. Rec., Vol. I., p. 188, 1913 ; Assam.

Totanus leucurus (not Brehm) Gray and Hardwicke, Ill. Ind. Zool., Vol. II., pl. 51, fig. 1, 1834.

Totanus ochropus (not L.) Middendorff, Sibirische Reise, Vol. II., p. 215, 1851 ; Schrenck, Vögel des Amur-Landes, p. 416, 1860 ; Radde, Reisen Suden von Ost-Sibir., p. 330, 1863 ; Seebohm, Ibis 1879, p. 152 ; *id.*, Geogr. Distr. Charadr., p. 368, 1887 ; Taczanowski, Mém. l'Acad. Imp. Sci. St. Petersb., Ser. VII., Vol. XXXIX., p. 872, 1893.

Actitis ochropus Biddulph, Ibis 1881, p. 96 (Gilgit, India).

Helodromus ochropus Sharpe, Cat. Birds Brit. Mus., Vol. XXIV., p. 437, 1896.

Tringa ochropus Mathews, Nov. Zool., Vol. XVIII., p. 221, 1912.

DISTRIBUTION. Siberia (breeding), migrating southwards to the Malay Archipelago in winter.

Adult male, in breeding-plumage. Dark brown above, the feathers on the head, hind-neck, and sides of neck margined with white, those on the back and scapulars spotted with white ; a well-defined line of white on the sides of the forehead to the eye ; the short upper tail-coverts barred with white, the long ones wholly white ; wings almost entirely dark brown above ; tail white, barred and spotted with dark brown ; lores, sides of face, and fore-neck white, minutely streaked with dark brown ; sides of breast dark brown, coarsely marked with white ; axillaries and under wing-coverts dark brown, narrowly barred with white ; lower primary-coverts uniform dark brown like the quill-lining ; breast, abdomen, lower-flanks, and under tail-coverts white.

Adult female. Similar to the adult male.

Adult male, in winter-plumage. Differs from the adult male in nuptial-dress in being darker and more uniform above, with no white streaks on the head or neck and only very dull and nearly obsolete white spots scattered over the back and wings ; a well-defined line of white on the sides of the forehead to the eye, also a narrow white ring encircling the eye ; sides of face and sides of neck darker and more heavily streaked, as also the fore-neck ; bill brownish black ; iris brown ; tarsi and feet green. Total length 227 mm. ; culmen 36, wing 143, tail 61, tarsus 36.

Adult female. Similar to the adult male, but larger.

Nest. " In Siberia it lays its eggs in the old nest of a Fieldfare " (Seebohm).

* The Plate is lettered *Tringa ochropus*.

THE BIRDS OF AUSTRALIA.

Eggs. Clutch, four; ground-colour pale stone to light greenish-blue; spotted, more at the larger end, with dark purplish-red spots and underlying ones of lavender; axis 40.5 to 42 mm., diameter 28.5 to 29.5.

Breeding-season. July (Seeborn, Siberia).

This is the only Sandpiper that I know of which lays its eggs in the deserted nests of other birds, built in trees.

"I shot my first Green Sandpiper on the 15th of June, on the Arctic circle. It was by no means a common bird. On the 6th of July at Egarka, in lat. 67°, I found a nest of this bird in a willow tree about six feet from the ground, containing one egg. I did not meet with it further north, but on my return journey early in August, I found it common on the banks of the river near Yen-e-saïsk."*

"One specimen killed in January. Very common in April; disappears May, June, and July; reappears in considerable numbers in the middle of August [in Gilgit]."

"This wader comes from Quellande as well as from the mouth of the Amur, and we have specimens shot in both places. Maack found it for the first time on the 6 (18) of May on the Schilka not far from the village of Bjankina, and I shot it on the 5 (17) of May in the same year (1855) at the mouth of the Amur on the muddy ground of one of the willow-covered islands, in the Amur River, a little above Nikolajevschen. Evidently the first days of May and sometimes the last days of April were the usual time for its appearance in the Amur Lands. Our three specimens were adult males in full spring plumage."

Middendorff (*l.c.*) says this species appeared in the Stanovi Mountains on May 4th, and from then on was fairly plentiful. The male frequently rose high in the air, wheeling about like a Snipe, but without making the humming sound of that bird. The note on the whole resembles that of a Snipe, but is more powerful and accompanied by a piping second note. It was fairly frequently seen in the south coast of the sea of Ochotsk.

Radde (*l.c.*) records that during the summer of 1856 this species was seen fairly frequently in Dauria, chiefly in single pairs.

Taczanowski (*l.c.*) says: "According to Dybowski and Godlewski, it is common in all the localities they visited from the Baikal to the Sea of Japan. It is to be found on the thinly-grassed borders of lakes, more especially in the middle of forests. In Autumn it is very numerous. It arrives in May; disappears in September; nests in small numbers in all localities. According

* Seeborn, *Ibis* 1879, p. 152.

† Biddulph, *ib.* 1881, p. 96.

‡ Schrenck, *Vögel des Amur-Landes*, p. 416, 1860.

EASTERN GREEN SANDPIPER.

to Przewalski it arrives on Lake Khanka towards March 2nd, and its autumn migration takes place between the middle of August and the middle of September."

"It certainly nests on the Island of Sakhaline; we have often observed it in the Valley of the Douika during the latter half of June and in July" (Nikolski).

The bird figured and described is a male in winter-plumage, collected at Assam on January 28th, 1902.

The Eastern form differs from the Western in being much paler above and is also slightly larger.

Linné called this species *Tringa ocrophus* and this has been generally amended to *ochropus*. Recently in the *Hand-List of British Birds* the original spelling was correctly adhered to, but unfortunately the reason given is not correct; thus page 181, footnote, reads: "It has been supposed that '*ocrophus*' is an error for '*ochropus*,' but this is not so. Linnæus adopted the name '*Ocrophus*' from the '*Ocrophus* sive *Rhodophus*' of Gesner, Aldrovandus, and other older writers.—E. H."

Linné's references read:—

"*Rhodophus* s. *Ocrophus* Gesn. av., 508-511.

Aldr. orn., l. 20 c. 39."

Upon investigation in no place do either Gesner or Aldrovandus spell the words *Rhodophus* nor *Ocrophus*.

Six times Aldrovandus uses the latter, four times spelling it *Ochropus*, the other two *Ocropus*, while the spelling of the former is *Rhodopus*. Gesner also spells the latter quite correctly *Rhodopus*, and spells *Ochropus* four times, no other spelling occurring.

The purists have therefore good grounds for emendation, but then they are inconsistent if they admit the emended name, as it is quite inapplicable to this bird and would need rejection as untrue.

This is another species which has not yet any good grounds for inclusion in the Australian List. Recorded by Hall in the *Vict. Nat.*, Vol. XVII., p. 163, 1902, from North-west Australia, I had the plate prepared and the matter drawn up before I found out that one of the birds upon which the record was based was in the Rothschild Museum, Tring. I immediately went there to examine the bird in connection with this work, and was surprised to find that it did not belong to this species at all, but was *Rhyaocophilus glareola affinis*. I am including the plate and these notes, and would ask Australian ornithologists to look out for this bird, as it may yet be found. It should be noted that when Hall first recorded this species, he noted that the specimens did not agree with the description in the *Catalogue* of the Birds in the British Museum.

GENUS—H E T E R O S C E L U S .

HETEROSCELUS Baird, Rep. Expl. Surv. Pac.									
Ocean, Vol. IX., pt. II., Zool., p. 734,									
1858	..	..	..	..	..	..	Type	<i>H. brevipes</i>	= <i>incanus</i> .
<i>Heteractitis</i> Stejneger, Auk, Vol. I., p. 236,									
1884	..	..	..	..	..	..	Type	<i>H. incanus</i> .	

MEDIUM Totanine Waders with short, somewhat stout bills, long wings, medium tails, short stout legs, and strong feet.

This genus is easily recognisable by the stout bill in conjunction with the nature of the metatarsal covering from which it gains its name.

The culmen is stout and short, being less than one-fourth the length of the wing and almost exactly half the length of the tail. The nasal groove varies from one-half to two-thirds the length of the culmen. Wings long and pointed, the first primary longest. Tail rather less than half the length of the wing. Metatarsus short, less than the culmen, but longer than the middle toe and claw, the exposed tibia being about half the length of the metatarsus. There is a distinct web between the outer and middle toes towards the base, but only an indistinct webbing between the middle and inner toes. The hind toe and claw are proportionately long. The metatarsus is covered with transverse scutellæ in front and the sides are coarsely reticulate; the back is clothed with little larger reticulation in some, in hexagonal scales approaching transverse scutes in others, and in apparently regular scutellæ in others.



J G Keulemans, del

Witherby & Co

HETEROSCELUS INCANUS BREVIPES.

GREY-RUMPED SANDPIPER.

(PLATE 151.)*

TOTANUS BREVIPES Vieillot, Nouv. Dict. d'Hist. Nat., Vol. VI., p. 410, 1816 ; Timor.*Totanus brevipes* Vieillot, Nouv. Dict. d'Hist. Nat., Vol. VI., p. 410, 1816 ; Pucheran, Revue Mag. Zool. 1851, p. 370 ; Swinhoe, Ibis 1863, p. 407.*Trynga glareola* (not Linné) Pallas, Zoogr. Rosso-Asiat., Vol. II., p. 194, 1826.*Totanus pedestris* Lesson, Traité d'Orn., p. 552, 1831 (pars).*Totanus pulverulentus* S. Muller, Verh. Nat. Gesch. Land en Volkend., p. 153, 1842 (Timor) ; Temminck and Schlegel, Fauna Japonica, Aves, p. 109, pl. 65, 1849 ; Middendorff, Sibirische Reise, Vol. II., p. 214, 1851 ; Radde, Reisen Suden von Ost-Sibir., p. 326, 1863.*Totanus griseopygius* Gould, Proc. Zool. Soc. (Lond.) 1848, p. 39 (Port Essington) ; *id.*, Birds Austr., Vol. VI., pl. 38, 1848.*Actitis brevipes* Blyth, Cat. Birds Mus. As. Soc. Bengal, p. 267, 1852.*Gambetta pulverulenta* Bonaparte, Comptes Rendus Sci. (Paris), Vol. XLIII., p. 597, 1856.*Gambetta griseopyga id.*, *ib.**Gambetta brevipes id.*, *ib.**Totanus gryseopygus* Rosenberg, Nat. Tijdschr. Nederl. Ind., Vol. XXV., p. 255, 1863.*Totanus incanus* (not Gmelin) Schlegel, Mus. Pays-Bas., Vol. V., Scolopaces, p. 74, 1864 ; Salvadori, Orn. Papua. e Mol., Vol. III., p. 320, 1882 ; Ramsay, Tab. List Austr. Birds, p. 20, 1888 ; Legge, Proc. Austr. Assoc. Adv. Sci., Vol. IV., p. 946, 1892 ; North, Birds County Cumberl., p. 112, 1898.*Gambetta pulverulentus* Gould, Handb. Birds Austr., Vol. II., p. 268, 1865.*Actitis pulverulentus* Dybowski and Parrex, Journ. für Ornith. 1868, p. 337.*Actitis incana* (not Gmelin) Finsch, Proc. Zool. Soc. (Lond) 1879, p. 15.*Heteroscelus incanus* (not Gmelin) Bogdanow, Comp. Av. Imp. Rossi, p. 98, 1884.*Heteractitis brevipes* Stejneger, Bull. U.S. Nat. Mus., No. 29, p. 137, 1885 ; Sharpe, Cat. Birds Brit. Mus., Vol. XXIV., p. 449, 1896 ; Hall Key Birds Austr., p. 85, 1899 ; Campbell, Nests and Eggs Austr. Birds, p. 811, 1901 ; Carter, Emu, Vol. III., p. 177, 1904 ; Hartert, Nov. Zool., Vol. XII., p. 202, 1905 ; Hall, Key Birds Austr., p. 85, 1906 ; North, Rec. Austr. Mus., Vol. VI., p. 343, 1907 ; Mathews, Handl. Birds Austral., p. 26, 1908 ; Ogilvie-Grant, Ibis 1910, p. 180.* The Plate is lettered *Tringa brevipes*.

THE BIRDS OF AUSTRALIA.

Totanus incanus brevipes Seebohm, Geogr. Distr. Charadr., p. 361, 1888.

Heteroscelus brevipes Taczanowski, Mém. l'Acad. Imp. Sci. St. Petersb., Ser. VII., Vol. XXXIX., p. 877, 1893.

Tringa brevipes Mathews, Nov. Zool., Vol. XVIII., p. 221, 1912.

DISTRIBUTION. Southern Siberia (breeding), migrating southward to Australia in winter.

Adult male, in breeding-plumage. General colour above slate-grey, the feathers everywhere narrowly margined with white, more broadly on the greater wing-coverts and upper tail-coverts; bastard-wing dark brown; primary-coverts dark brown, the inner ones tipped with white; primary-quills dark brown, the outer one with a white shaft; secondaries pale slate-grey fringed with white, the long innermost secondaries like the back; forehead, a line over the eye, ear-coverts, and throat white, minutely spotted and streaked with grey; fore-neck, breast, and sides of body barred with slate-grey; abdomen and under tail-coverts white, the latter barred with grey at the tips; axillaries and under wing-coverts slate-grey fringed with white at the tips; bill black, base of lower mandible brown; iris dark brown; feet dull yellow. Total length 280 mm.; culmen 39, wing 161, tail 67, tarsus 35.

Adult female, in breeding-plumage. Similar to the adult male.

Adult male, in winter-plumage. Differs from the adult in nuptial-dress in being uniform slate-grey above, also in the uniform pale grey of the fore-neck, breast, and sides of body.

Adult female. Similar to the adult male.

Immature male, bird of the year. Dark slate-grey above, and the margins of the feathers dappled with white, some of the wing-coverts margined with white; crown of head, hind-neck, and mantle uniform slate-grey; lores dusky; fore-neck, chest, and sides of body uniform grey, darker on the latter like the axillaries; lower-flanks more or less barred with white.

Nest and Eggs. Undescribed.

MR. J. P. ROGERS found these fairly common in North-west Australia. They frequented a little muddy creek, a few inches in depth, which always had a stream of salt water running into it; a few small young mangroves grew on either side. Further north at Point Torment they were always seen on the beaches and mud flats, and were very rare till March 17th, after which date they were fairly numerous and freely associated with *Pagoa geoffroyi* and *Terekia cinerea*.

On Melville Island they were also plentiful and in full summer-plumage.

Captain S. A. White says the specimens he procured on the Capricorn Islands were poor, and gave one the impression that they had come a long journey.

Mr. J. W. Mellor writes: "These birds were in small flocks on the Capricorn Island in October, 1910. They were feeding on the open coral strand flats when the tide was down; at high tide they mixed with other species of waders such as *Charadrius dominicus*, *Arenaria interpres*, *Numenius variegatus*, etc."

GREY-RUMPED SANDPIPER.

Mr. Tom Carter sent me the following: "This species was fairly common on some parts of the coast of the North West Cape from November to May. Sometimes they were in flocks of from fifty to one hundred birds. On one occasion I killed eight birds on discharging one barrel of my gun at quite a large party of waders whose identity was previously uncertain.

"The latest date on which I observed specimens was on the 6th June, 1899, when I shot one out of a small flock feeding in a mangrove swamp near the North West Cape."

Middendorff found it along the North coast of the Sea of Ochotsk in large flocks, throughout the summer.

Radde records that he shot, on July 15th, an old female, that was living alone on Lake Baikal, not far from the high Kodshor Mountains.

"Dybowski and Godlewski found it plentiful in all the countries they visited between Baikal and the Sea of Japan on the low ground by rivers, lakes and seas. In the spring they arrive in the early days of May and are seen until the end of the month; in the autumn they return south in the first days of September." (Taczanowski.)

Of the birds figured and described, the one in winter-plumage was collected at Port Hacking, New South Wales, in November, 1892; the one in summer-plumage at Point Torment, North-west Australia, on March 14th, 1911, by Mr. J. P. Rogers.

The two forms here admitted I consider should be regarded as of subspecific value only, though there is much argument for their specific separation. How very close they are can be realised by the fact that many of the best ornithologists failed to appreciate the differences until Stejneger (*Bull. U.S. Nat. Mus.*, No. 29, 1885, p. 132, *et seq.*) carefully detailed these. I have criticised many specimens and find his characters quite reliable but not always constant, hence my conclusion.

H. incanus and *brevipes* seem to be geographical representatives of each other with probably quite distinct breeding-grounds. The former is the American and Polynesian wandering form, the latter the subspecies that visits Asia and Australia. The differences pointed out by Stejneger and recognised by me, are firstly: in *H. incanus* the groove in the exposed culmen is about two-thirds its length; in *H. brevipes* it is only about one-half. If the birds thus separated are further criticised, the former is darker grey above while the latter is paler brownish-grey in whatever plumage it may be; the former also averages very slightly larger throughout. In their summer-plumages they differ more decidedly, *H. incanus* being uniformly barred underneath right to the under-tail coverts. *H. brevipes* has the bars less decidedly marked on the breast while they disappear on the middle of

THE BIRDS OF AUSTRALIA.

the abdomen and under-tail coverts. In any unworn plumage the upper tail-coverts of *brevipes* show distinct pale barring while in *incanus*, at most only a pale edging is seen. The metatarsal covering is somewhat peculiar as it does not show the regular scutellation both in front and behind as seen in almost every other Totanine genus. The front is irregularly scutellate in most specimens, the scutes rough and coarsely over-lapping in *incanus*, but more regular, smooth and tending to fusion in *brevipes*; the sides and back in *incanus* are coarsely covered with hexagonal scales, the hind row being larger and approaching somewhat to scutes in appearance, while in *brevipes*, through fusion again, the hind row appears as regular scutes and the hexagonal side-covering is smooth and compressed, giving most specimens of this form the appearance of the typical Totanine metatarsal covering. Specimens however occur which have the metatarsal covering somewhat intermediate; the exposed tibia shows the reverse—the fore-part being reticulated while the hind appears regularly scutellate.

All the specimens that I have yet examined from Australia (save one as hereafter noted) are undoubtedly *H. brevipes*.

The main complication in the nomenclature of this species has been its confusion with *H. incanus*, as noted above. The only synonyms absolutely referring to this form are *Totanus pulverulentus* Salomon Muller and *Totanus griseopygius* Gould; the latter described a specimen from Port Essington.



J. G. Keulemans, del.

Witherby & Co

$\frac{3}{4}$
TRINGA INCANUS.
(AMERICAN GRAY-RUMPED SANDPIPER).

HETEROSCELUS INCANUS INCANUS.

WANDERING TATTLER.

(PLATE 152.)*

SCOLOPAX INCANA Gmelin, Syst. Nat., p. 658, 1789; Eimeo and Palmerston Islands (Pacific Ocean).

Scolopax incana Gmelin, Syst. Nat., p. 658, 1789.

Totanus incanus Vieillot, Nouv. Dict. d'Hist. Nat., Vol. VI., p. 400, 1816; Seebohm, Geogr. Distr. Charadr., p. 360, 1887; Rothschild, Av. Laysan., p. 15, 1893.

Scolopax solitarius Bloxham, Voy. "Blonde" Sandwich Is., p. 252, 1826 (Sandwich Islands).

Totanus fuliginosus Gould, Voy. "Beagle," Birds, Vol. II., p. 130, 1841 (Galapagos Islands).

Scolopax undulata Forster, Descr. Anim., ed. Licht., p. 173, 1844 (Otaheite).

Scolopax pacifica id., ib., p. 174 (Tongatabu).

Totanus oceanicus Lesson, Descr. Mamm. et Ois., p. 244, 1847 (Marquesas Islands); Cassin, U.S. Expl. Exp., p. 318, 1858.

Totanus polynesiae Peale, U.S. Expl. Exp., p. 237, 1848 (cf. 2nd ed., p. 318, 1858 (Paumotu Islands)).

Totanus pacificus Hartlaub, Wieg. Archiv. für Naturg. 1852, p. 134.

Totanus solitarius id., ib., p. 135.

Actitis pulverulentus (not Muller) Lichtenstein, Nomencl. Av. Mus. Zool. Berol., p. 92, 1854.

Totanus brevipes (not Vieillot) Cassin, Proc. Acad. Nat. Sci. Philad., p. 40, 1856; id., U.S. Expl. Exp., p. 319, 1858.

Gambetta fuliginosa Bonaparte, Comptes Rendus Sci. (Paris), Vol. XLIII., p. 597, 1856.

Gambetta oceanica id., ib.

Heteroscelus brevipes Baird, Rep. Expl. Surv. Pacific Ocean, p. 734, 1858.

Totanus undulatus Verreaux et des Murs, Revue Mag. Zool. 1860, p. 437.

Actitus incanus Finsch and Hartlaub, Fauna Centr. Polyn., p. 182, 1867.

* The Plate is lettered *Tringa incanus*.

THE BIRDS OF AUSTRALIA.

Heteroscelus incanus Coues, Key North Amer. Birds, p. 261, 1872; Taczanowski, Mém. l'Acad. Imp. Sci. St. Petersb., Ser VII., Vol. XXXIX., p. 880, 1893.

Totanus semipalmatus (not Gmelin) Streets, Amer. Nat. 1877, p. 71.

Heteractitis incanus Stejneger, Auk, Vol. I., p. 236, 1884; *id.*, Bull U.S. Nat. Mus., No. 29, p. 132, 1885; Sharpe, Cat. Birds Brit. Mus., Vol. XXIV., p. 453, 1896; Rothschild, Av. Laysan, p. 255, 1900; Campbell, Nests and Eggs Austr. Birds, p. 812, 1901; Hall, Key Birds Austr., p. 85, 1906; Mathews, Handl. Birds Austral., p. 27, 1908.

Heteroscelus oceanicus Heine, Nomencl. Mus. Hein., p. 327, 1888.

Tringa incana Mathews, Nov. Zool., Vol. XVIII., p. 221, 1912.

DISTRIBUTION. Alaska, wandering to the Galapagos Islands, the Islands of the Pacific and to Cape York in winter.

Adult male, in summer-plumage. Upper-parts olive-grey including the crown of the head, entire back, wings and tail; the small marginal upper wing-coverts dark brown fringed with white like some of the major and primary-coverts; primary- and secondary-quills dark brown, paler on the inner webs, the shaft of the outer primary inclining to white; an ill-defined white line running from the base of the bill over the eye and along the sides of the crown; sides of face, ear-coverts, sides of neck, and fore-neck streaked with brown and white; chin and upper-throat with small ovate spots of slate-brown; remainder of the under-surface slate-grey barred with white; axillaries slate-brown; under wing-coverts similar in colour, faintly edged on the inner, and more broadly on the outer, coverts with white.

Adult female. Similar to the adult male.

Adult, in winter-plumage. Differs from the adult in summer-plumage in lacking the barring on the under-surface. There is a greyish band on the breast, and the sides of the body are also of the same colour. Throat, abdomen, vent, and under tail-coverts white; bill greyish-green; iris brown; feet and legs dull green. Total length 260; culmen 38, wing 164, tail 70, tarsus 34.

Nest and Eggs. Undescribed.

“THE Wandering Tattler, the ‘Tschorniy Kulik’ of the Russians, comes to the [Commander] Islands during the latter part of May, and may then be met with on the stony beaches close to the water’s edge, in pairs, or in very small troops. At the time of their arrival they are less shy than totanine birds generally, but their conduct changes after awhile so that I only once, on Copper Island, in the middle of July, observed a single specimen during the summer, although I feel suspicious that they breed there.

“This bird makes quite a different impression on the observer from the other totanine waders, and its habits seem to be rather peculiar, in many respects reminding one of the Oyster-catcher. It carries its body much in the same manner as *Actitis hypoleucos*, but very seldom flirts its tail up and down like the latter, nor has it as much of the peculiar movement of the head and neck as the Common Sandpiper. It is a much more quiet bird, very often standing immovable for a long while, staring down into the water.

WANDERING TATTLER.

Its flight is graceful and very rapid. Its voice loud and harsh, almost screaming. I only met it among rocks and stones, seldom, if ever, on the sandy or gravelly beaches.”*

The bird figured and described is the only Australian record ; and is now in my collection. Nothing is known about the specimen ; there is however quite a probability of its being again recorded, as it is this form and not *H. i. brevipes* which has been procured in Fiji and New Zealand.

*Stejneger, *Bull. U.S. Nat. Mus.*, No. 29, p. 136, 1885.

GENUS—A C T I T I S .

ACTITIS Illiger, Prodrumus, p. 262, 1811 Type *A. hypoleucos*.

Also spelt—

Atites Cuvier, Règne Anim., 2nd ed., Vol. I., p. 532, 1829.

Actitus Baker, Ornith. Index, p. 145, 1835.

Actites Newton's ed. Blasius List Birds Europe, p. 18, 1862.

Tringoides Bonaparte, Giorn. Arcad. (Roma), Vol. LII.,

p. 57, 1831 Type *A. hypoleucos*.

Also spelt—

Tryngodes Heine, Nomencl. Mus. Hein., p. 326, 1888.

Trygoides id., ib.

Guinetta Gray, List Genera Birds 1840, p. 68 .. Type *A. hypoleucos*.

SMALLEST Totanine Waders with short straight bills, long wings, long tail, short legs, and long toes. The culmen is short, straight, and slender with the groove in the upper mandible extending three parts its length; the culmen is scarcely longer than the metatarsus, which is about equal to the middle toe and claw; the interramal space is feathered.

The long wings have the first primary longest. The tail is long, rounded and about half the length of the wing or twice the length of the culmen. The metatarsus is regularly scutellate in front and behind and about equal to the middle toe and claw in length; the exposed portion of the tibia is less than half the length of the metatarsus.

The toes are long and a basal web connects the outer and middle, an indistinct web joining the middle and inner toe. Long hind toe present.

The generic name used is that employed by the American Ornithological Union, probably following Stejneger: most British ornithologists have preferred *Tringoides*. The facts are quite simple and seem almost beyond argument. Illiger proposed *Actitis* with a number of species, one of which was *hypoleucos* Linné; eleven years afterwards Boie used it for that species alone, distributing the other species included by Illiger in other genera. Bonaparte later proposed *Tringoides* for *Actitis* Boie, not *Actitis* Illiger; but as Boie's species was one of Illiger's, that statement seems incorrect. Later, probably unmindful of Bonaparte's action, Gray also introduced *Guinetta* on the same grounds. The only argument that can be raised against the present usage is that Illiger simply utilised *Actitis* as a substitute-name for an earlier

ACTITIS.

genus, as *Tringa* Linné, but the constitutents cited by Illiger forbid such conclusion. In order to definitely fix the present species as type of Illiger's species, it was formally designated by the American Ornithological Union's *Checklist* Committee in 1886. Whatever method of fixing the type of *Actitis* be employed, whether elimination, restriction or direct type-designation, the result is that *T. hypoleucos* Linné must be so accepted.

ACTITIS HYPOLEUCOS AURITA.

EASTERN COMMON SANDPIPER.

(PLATE 153.)*

TRINGA AURITA Latham, Suppl. Index Ornith., p. lxvi., 1801; New Holland=New South Wales.

Tringa aurita Latham, Suppl. Index Ornith., p. lxvi., 1801.

Totanus hypoleucus Horsfield, Trans. Linn. Soc. (Lond.), Vol. XIII., p. 192, 1821 (Java); Seebohm, Geogr. Distr. Charadr., p. 371, 1887.

Tryngra leucoptera Pallas, Zoogr. Rosso-Asiat., Vol. II., p. 196, 1826 (Siberia).

Actitis hypoleucos Middendorff, Sibirische Reise, Vol. II., p. 215, 1851; Schrenck, Vögel des Amur-Landes, p. 417, 1860; Radde, Reisen Suden von Ost-Sibir., p. 330, 1863; Gould, Handb. Birds Austr., Vol. II., p. 263, 1865; Stejneger, Bull. U.S. Nat. Mus., No. 29, p. 131, 1885; Ramsay, Tab. List Austr. Birds, p. 20, 1888; Taczanowski, Mém. l'Acad. Imp. Sci. St. Petersb., Ser. VII., Vol. XXXIX., p. 882, 1893.

Totanus macularius ? v. *auratus* Hodgson, in Gray's Miscel., p. 86, 1844.

Actitis empusa Gould, Proc. Zool. Soc. (Lond.) 1847, p. 222 (Port Essington); *id.*, Birds Austr., Vol. VI., pl. 35, 1848.

Tringoides empusa Gray, Proc. Zool. Soc. (Lond.) 1858, p. 197.

Totanus empusa id., Cat. Mamm. and Birds New Guinea, p. 52, 1859.

Tringoides hypoleucus Swinhoe, Ibis 1860, p. 66; Salvadori, Ornith. Papua. e Mol., Vol. III., p. 318, 1882; Legge, Proc. Austr. Assoc. Adv. Sci., Vol. IV., p. 948, 1892; Sharpe, Cat. Birds Brit. Mus., Vol. XXIV., p. 456, 1896; Robinson and Laverock, Ibis 1900, p. 651; Campbell, Nests and Eggs Austr. Birds, p. 812, 1901; Hall, Emu, Vol. II., p. 66, 1902; Carter, *ib.*, Vol. III., p. 177, 1904; Hall, Key Birds Austr., p. 85, 1906; Mathews, Handl. Birds Austral., p. 27, 1908; Littler, Handb. Birds Tasm., p. 139, 1910.

Tringa hypoleucos Mathews, Nov. Zool., Vol. XVIII., p. 221, 1912.

DISTRIBUTION. Siberia (breeding), migrating southward to Australia and Tasmania in winter.

* The Plate is lettered *Tringa hypoleucus*.



J. G. Keulemans del

Witherby & Co

$\frac{1}{1}$
TRINGA HYPOLEUCUS.
(COMMON SANDPIPER).

EASTERN COMMON SANDPIPER.

Adult male, in summer-plumage. General colour above olive-brown, including the head, back, wings, and tail; the feathers of the head, hind-neck, and mantle having narrow dark shaft-lines, while those of the back and wings have dark cross-bars, some of the lateral upper tail-coverts are edged with white; the small marginal coverts round the bend of the wing as also the outer edge of the bastard-wing and outer primary-coverts white; bastard-wing, primary-coverts, and primary-quills pale brown, the latter white on the middle inner-webs, except the outer one, the inner ones edged with white at the tips; secondaries white at the base and brown at the tips, the middle ones edged with white at the tips, some of the inner quills almost entirely white, the innermost olive-brown barred with darker brown; middle tail-feathers like the back, the outer feathers paler, notched and tipped with white also mottled with buffy-white; a white spot in front of the eye and a dark line through the latter; sides of face and ear-coverts pale brown, intermixed with white, giving a streaked appearance; throat, abdomen, under tail-coverts white, like the axillaries and under wing-coverts; fore-neck and breast white with narrow brown shaft-lines becoming brown on the sides of the breast where it forms a patch. Total length 215 mm.; culmen 26, wing 112, tail 58, tarsus 24.

Adult female, in summer-plumage. Similar to the male but larger, and the streaks on the middle of and the patch on the sides of breast not so strongly pronounced.

Adult male, in winter-plumage. Differs from the summer-plumage in being more bronzy-olive on the back and scapulars, the crossing and shaft-lines not so strongly pronounced, the bars on the wings minute and composed of black and buff; bill brown, base of lower mandible grey; iris brown; feet leaden-grey tinged with brown.

Adult female, in winter-plumage. Similar to the male.

Nest. A depression in the grass.

Eggs. "Clutch four. Ground colour either greyish or yellowish white, covered all over with underlying spots of grey, and others, few and irregular, of deep or coffee-brown. On some there are a few lines and zig-zags; generally the markings are thicker on the large end, which is sometimes even smudged with brown. Axis 33 to 37.2 mm.; diameter 24.8 to 26.2." (Laczanowski.)

Breeding-season. June and July (Sakhaline Island, Nikolski).

MR. J. P. ROGERS collected these birds at Derby, North-west Australia: "They are not numerous during March and April, and do not go in flocks; they are usually found along the muddy banks of tidal creeks and often in the small gutters through the mangroves, also in the reefs at low tide and sometimes on the sandy beaches. When disturbed they perch on the scattered mangroves which in places are perhaps one hundred yards or more off the water's edge at high tide."

On Melville Island the same man found them fairly plentiful in November, and tame for a Wader. At Spring tides when the beaches were covered, they were seen feeding in the forest country, which came right down to the beach. It was found usually solitary, but sometimes small parties of three and four were observed, and at times it mixed with other species of Waders.

Captain S. A. White says that he has seen this species at the mouth of the Adelaide River in South Australia.

THE BIRDS OF AUSTRALIA.

Mr. Tom Carter writes that this bird, though nowhere common, has been observed in various parts of West Australia. He shot one on October 30th, 1901, at Point Cloates, and observed others in January of 1888 and 1895, and March, 1910, on the banks of the Vasse River in South-west Australia.

"This species is common but very wild. With a high tide and covered beach they are to be seen on the rocks at the water's edge preening their feathers or sleeping. One can then get a gunshot at them, but if not promptly killed they are difficult to secure, because of their cleverness in diving. When I wounded the one forwarded (11.9.01) it fell into clear water. Upon trying to pick it up it went under and swam as easily as a Grebe. It used its wings in the same manner as a Plotus, and moved rapidly through the water. I had to fire a second time.

"When feeding this species seems to prefer rocks and shingle beaches rather than mud flats."*

Middendorff collected specimens near the Stanovoi Mountains, and towards the end of August also on the south coast of the sea of Ockotsk.

He records it also from S'ajanischen (Sajan) Mountains.

Schrenck found it one of the commonest birds on the banks of the Amur. During his journey up the river he had almost daily opportunities of noticing it along the pebbly shore, where it relieved the monotony. He found it easy to approach near enough in the boat to shoot it. He first saw it on his journey up stream near Tebach, on the 16 (28) of May, but it must have been there earlier. Mostly they were to be seen in pairs, sometimes in small flocks of three or four birds. All specimens were in summer-plumage. In July and August he and Maack shot specimens in Dondon on the Amur, Tumurgu on the Ussuri, in the Burega Mountains, etc. As late as 15 (27) August they showed no signs of moulting.

Radde shot a male on Lake Baikal on the 16th July.

"Dybowski and Godlewski found it common in all the country they visited between Lake Baikal and the sea of Japan, and that it did not differ in habits from European birds. It arrives in the first half of May. Early in June it commences to brood, and stays till October. The bird certainly nests in the island of Sakhaline; we met it in small numbers in June and July on the River Douika, and on the shore of the sea near Alexandrowka. Poljakow found it in May at the mouth of the river Siska" [Nikolski]. (Taczanowski, *l.c.*)

As suggested by Gray† the bird figured in the Watling Drawings, upon which Latham founded *Tringa aurita*, is this species. Sharpe in 1906 made a great mistake when he considered it to be *H. acuminata* Horsfield.

* Rogers, *Emu*, Vol. II., p. 66, 1902.

† *Ann. Mag. Nat. Hist.*, Vol. XI., p. 194, 1843.

EASTERN COMMON SANDPIPER.

Gould described a bird from Port Essington as *Actitis empusa*, of which he wrote: "Closely allied to *A. hypoleucos* but smaller." If the birds be considered separable, then Latham's name must be used in preference to Gould's, as the bird figured in the Watling Drawings was obtained at Sydney, New South Wales.

GENUS—X E N U S.

XENUS Kaup, Skizz. Entwick-Gesch. Nat. Syst., p. 115, 1829 Type *X. cinereus*.

Limicola Lesson, Traité d'Orn., p. 554, 1831 Type *X. cinereus*.
(not *Limicola* Koch, 1816)

Terekia Bonaparte, Comp. List Birds Europe and N. Amer.,
p. 52, 1838 Type *X. javanicus*.

Simorhynchus Keyserling und Blasius, Wirbelth. Europa's,
p. lxxiv., 1840 Type *X. cinereus*.

Rhynchosimus Heine, Nomencl. Mus. Hein., p. 326, 1888 Type *X. cinereus*.

New name for *Simorhynchus* preoccupied, and substitute
for *Terekia* on grounds of purism.

SMALLEST Totanine Waders with very long up-curved bills, long wings, medium tail, short legs, and long toes. The culmen is very long and distinctly upturned, with the tip not expanded but decurved; the base of the culmen is considerably wider than the tip, and the lower mandible has the base proportionately more swollen, the interramal space being unfeathered; the groove in the upper mandible extends more than half the length of the culmen. The culmen is less than half the length of the wing, but more than one-third. The wings are long and pointed with first primary longest, and are more than twice the length of the tail. The tail is rounded and of medium length being longer than the culmen, but less than half the length of the wing. The metatarsus is short, but is more than half the length of the culmen, and is regularly scutellate in front and behind. The toes are long and the outer connected with the middle by a distinct basal web which almost extends to the second joint, the inner showing a distinct web with the middle one which extends to the first joint; the middle toe is shorter than the metatarsus, and a long hind toe is present.

The generic name *Xenus* has been rejected on account of a prior *Xenos*, but as the Laws have not yet been altered to admit such action, I have no alternative but to use the former.



J. G. Keulemans, del.

Witherby & Co

$\frac{4}{5}$
TRINGA CINEREA.
(*TEREK SANDPIPER*).

XENUS CINEREUS JAVANICUS.

EASTERN TEREK SANDPIPER.

(PLATE 154.)*

TOTANUS JAVANICUS Horsfield, Trans. Linn. Soc. (Lond.), Vol. XIII., p. 193, 1821 ; Java.*Totanus javanicus* Horsfield, Trans. Linn. Soc. (Lond.), Vol. XIII., p. 193, 1821.*Scolopax sumatrana* Raffles, *ib.*, p. 327 (Sumatra).*Limosa recurvirostra* Pallas, Zoogr. Rosso-Asiat., Vol. II., p. 181, 1827 (Siberia).*Limicola indiana* Lesson, Traité d'Orn., p. 554, 1831 (India and Tasmania).*Terekia javanica* Bonaparte, Comp. List Birds Europe and N. Amer., p. 52, 1838.*Xenus cinereus* Gray, List Spec. Birds Brit. Mus., pt. III., p. 96, 1844 (pars).*Limosa cinerea id.*, Genera Birds, Vol. III., p. 570, 1847 (pars) ; Schrenck, Vögels des Amur-Landes, p. 419, 1860 ; Radde, Reisen Suden von Ost-Sibir., p. 330, 1863.*Terekia cinerea* Gould, Birds Austr., Vol. VI., pl. 34, 1848 ; *id.*, Handb. Birds Austr., Vol. II., p. 261, 1865 ; Seebohm, Ibis 1879, p. 152 ; Salvadori, Ornith. Papua. e Mol., Vol. III., p. 326, 1882 ; Stejneger, Bull. U.S. Nat. Mus., No. 29, p. 132, 1885 ; Legge, Proc. Austr. Assoc. Adv. Sci., Vol. IV., p. 945, 1892 ; Taczanowski, Mém. l'Acad. Imp. Sci. St. Petersb., Ser. VII., Vol. XXXIX., p. 856, 1893 ; Sharpe, Cat. Birds Brit. Mus., Vol. XXIV., p. 474, 1896 ; Hall, Key Birds Austr., p. 85, 1899 ; Campbell, Nests and Eggs Austr. Birds, p. 813, 1901 ; Hall, Key Birds Austr., p. 85, 1906 ; Mathews, Handl. Birds Austral., p. 27, 1908.*Limosa (Simorhynchus) cinerea* Middendorff, Sibirische Reise, p. 216, 1851.*Totanus cinereus* Schlegel, Mus. Pays-Bas, Vol. V., Scolopaces, p. 77, 1864.*Tringa (Terekia) cinerea* Ramsay, Proc. Linn. Soc. N.S.W., Vol. II., p. 198, 1878 ; *id.*, Tab. List Austr. Birds, p. 20, 1888.*Totanus terekius* Seebohm (pars) Geogr. Distr. Charadr., p. 369, 1887.*Rhynchosimus cinereus* Heine (pars) Nomencl. Mus. Hein., p. 326, 1888.*Tringa cinerea* Mathews, Nov. Zool., Vol. XVIII., p. 221, 1912.

DISTRIBUTION. Siberia (breeding), migrating southward to Australia in winter.

Adult male, in summer-plumage. General colour above, brown with a bronzy sheen, the feathers lined with brown shaft-streaks on the head, back, and scapulars, some of the short scapulars almost entirely black, which looks like two brown parallel lines ; lesser, median, and greater wing-coverts for the most part dark brown, like the bastard-wing, primary-coverts and quills, the latter paler and inclining to* The Plate is lettered *Tringa cinerea*.

THE BIRDS OF AUSTRALIA.

whitish on the inner webs, shaft of outer primary white ; secondary-quills greyish-brown broadly tipped with white, becoming less white on the inner ones, the long innermost secondaries like the back ; rump and upper tail-coverts ash-grey ; the long upper tail-coverts barred with buff, and dark brown on the margins of the feathers ; tail-feathers ashy-grey becoming lighter on the outermost ones ; the eye is encircled by a ring of short white feathers ; sides of face, sides of neck, throat and breast dull white streaked with dusky brown ; abdomen and under tail-coverts white like the axillaries and under wing-coverts, the small marginal-coverts on the under-wing brown, tipped with white ; bill black, base olive-brown ; iris brown ; feet, tarsus, and lower tibia dull yellow. Total length 290 mm. ; culmen 50, wing 136, tail 57, tarsus 30.

Adult female, in summer-plumage. Similar to the adult male but larger.

Adult, in winter-plumage. Differs from the adult in summer-plumage in being greyer and less bronzy above.

Immature. Differs from the adult in having the base of the bill yellowish instead of brown, the head and hind-neck grey with scarcely any perceptible dark shaft-streaks ; the dark markings on the back less pronounced, the rump paler grey, and the sides of face, throat and fore-neck more faintly streaked.

Nestling, in down. Upper-surface greyish-buff ; a broad black longitudinal line along the middle of the back ; a narrow black streak from the fore-head over the middle of the crown on to the hind-neck ; loreal streak and a narrow line behind the eye also black ; entire under-parts creamy-white.

Young, partly fledged. The feathers on the sides of the breast, back, scapulars, and tail grey tinged with sandy-buff, and black shaft-lines ; the crown of the head similar but more minutely marked ; fore-head whitish ; loreal streak black ; lesser median, and greater upper wing-coverts blackish like the primary-coverts and quills ; the greater coverts broadly tipped with white ; hind-neck, throat, and fore-neck covered with grey down ; abdomen white, down still adhering to the feathers of the abdomen, under tail-coverts, and tail.

Nest. A depression in the grass (Pallas).

Eggs. Clutch, four ; surface glossy ; ground-colour pale stone, sparingly covered all over, but more at the larger end, with medium-sized blotches of dark purplish-red and underlying ones of lavender ; axis 35-36.5 mm., diameter 26-27. "Clutch four ; ground colour, olive yellow, spotted with brown. Weight about $3\frac{1}{2}$ drachams." (Pallas.)

Breeding-season. June and July (Siberia).

MR. J. P. ROGERS found this bird rare about Derby, in the North-west of Australia, during December, 1910 ; January and February, 1911. But during March of the latter year they became fairly numerous. On March 27th he fired into a mixed flock of Waders and obtained examples of this species, and one each of *Numenius cyanopus*, *Phæopus variegatus*, *Pagoa geoffroyi*, *Heteroscelus brevipes*, *Squatarola squatarola*, and *Pisobia minuta ruficollis*.

He also found it common on Melville Island.

Middendorff, who collected individuals of this bird in Siberia, says : "From the end of June till the middle of August I saw large flocks of this species—chiefly females on the south coast of the sea of Ochotsk ; they did not breed, and their sexual organs remained undeveloped all the summer. Many flocks numbered over fifty individuals.

EASTERN TEREK SANDPIPER.

"When wounded they swam and dived very well. When isolated they uttered piping notes, which more than once led me to expect to find a species of *Totanus*."

Schrenck says that his specimens were collected on the Amur River, on the lower left bank opposite Ussuri-Mandung, on 7 (19) July.

Radde says: "In the beginning of August I came across several of these birds on marshy ground, near Kirinsk; they were in full winter plumage."

The bird figured and described is a male, and was collected on Melville Island, Northern Territory, on April 24th, 1912, by Mr. J. P. Rogers.

The Eastern birds are smaller and paler than the Western ones, which are typical, the bird being described from the Caspian Sea. It must always be remembered that in these Waders the female is larger than the male, and if an Eastern female be compared with a Western male the difference is not so marked as when sexes are correctly discriminated.

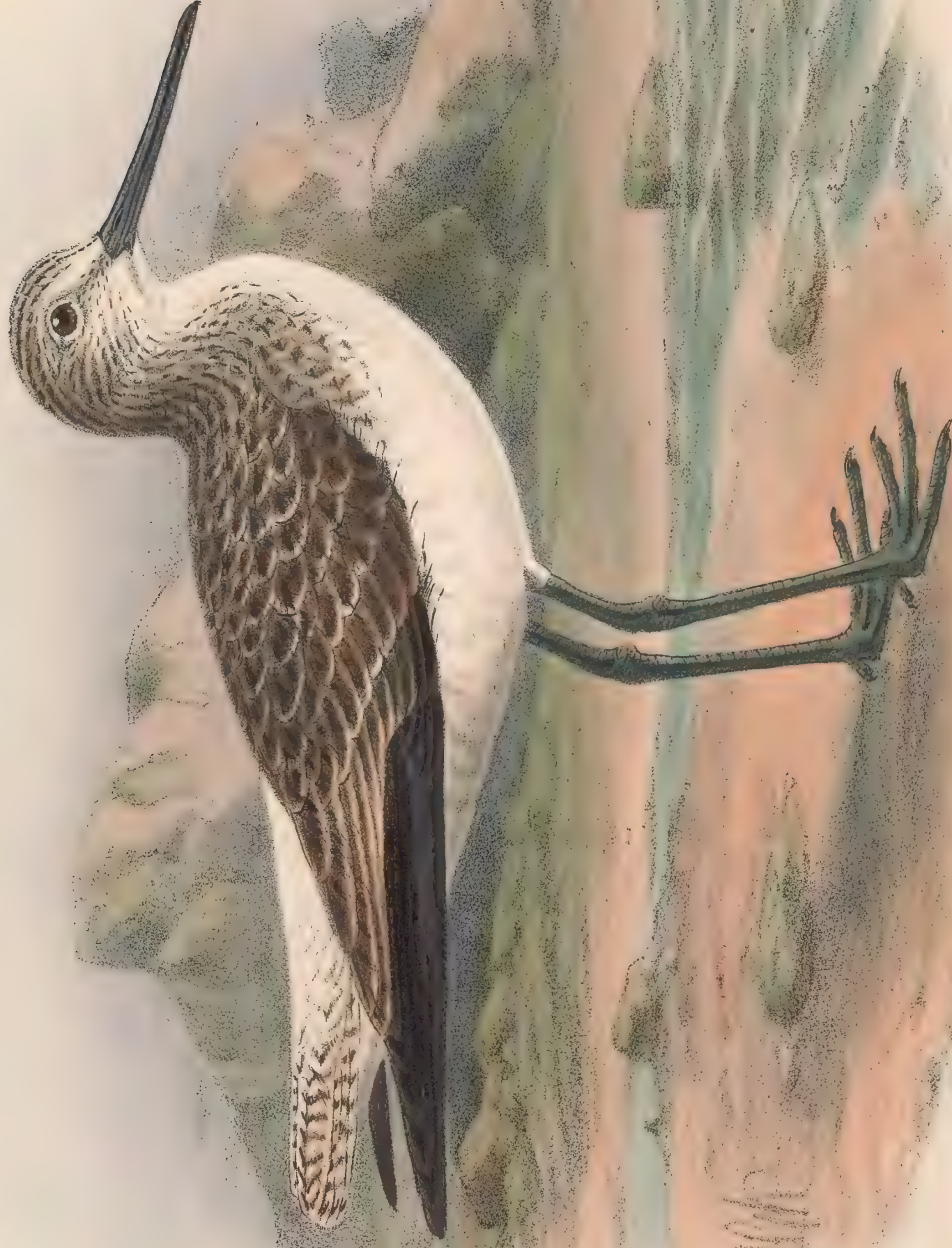
GENUS—G L O T T I S .

GLOTTIS Koch, Syst. baier., Zool., pp. xlii., 304, 1816	Type	<i>G. nebularius.</i>
<i>Limicula</i> Forster, Synopt. Cat. Brit. Birds 1817, p. 23	Type	<i>G. nebularius.</i>
<i>Limosa</i> Stephens, in Shaw's Gen. Zool., Vol. XII., pt. i., p. 85, 1824	Type	<i>G. nebularius.</i>
<i>Nea</i> Billberg, Synops. Faunæ Scand., Vol. I., pt. 2, 1828, tab. A, and p. 155	Type	<i>G. nebularius.</i>

LARGE Totanine Waders with long upturned bills, long wings, short tail, long legs, and small feet. The culmen is stout with a distinct upward tendency; the groove in the upper mandible is very short, being less than half the length of the culmen: though long the culmen is less than either the metatarsus or the tail.

The wings are long and pointed with the first primary longest, and are more than three times the length of the culmen and more than twice the length of the tail. The tail is comparatively short, being less than half the wing but longer than the metatarsus or culmen. The metatarsus is regularly scutellate in front and behind, and is longer than the culmen though shorter than the tail; the exposed tibia is equal in length to the middle toe and claw. The toes are short, and the middle toe is less than half the length of the metatarsus. A long hind toe is present; between the outer toe and middle one is a distinct basal web, between the inner and middle toe is an indistinct and scarcely appreciable web.

In the *Cat. Birds Brit. Mus.*, Vol. XXIV., p. 338, the facts of the webbing of the toes are transposed, and made the basis of the separation of the genus *Glottis*, though the sketch on p. 481 shows the facts correctly. This mistake allowed the separation of *S. melanoleucus* Gmelin from *nebularius*; the type of *Glottis* generically, and the admission of the former into *Totanus* (*sensu lato*). Curiously enough this mistake has been overlooked by American ornithologists, and apparently following the *Cat. Birds Brit. Mus.*, *melanoleucus* appears in the third edition of the *Checklist* as a species of *Totanus* far removed from *Glottis*, though previously American workers had unanimously associated the two (quite correctly) together.



J. G. Keulemans del.

Witherby & Co.

$\frac{3}{4}$

TRINGA NEBULARIUS.

(GREENSHANK).

GLOTTIS NEBULARIUS GLOTTOIDES.

EASTERN GREENSHANK.

(PLATE 155.)*

TOTANUS GLOTTOIDES Vigors, Proc. Zool. Soc. (Lond.) 1831, p. 173 ; Himalayan Mountains, India.

Totanus glottoides Vigors, Proc. Zool. Soc. (Lond.) 1831, p. 173 ; Gould, Cent. Birds Himal. Mts., pl. 76, 1832.

Limosa glottoides Sykes, Proc. Zool. Soc. (Lond.) 1832, p. 163.

Glottis glottoides Gould, Birds Austr., Vol. VI., pl. 36, 1844 ; *id.*, Handb. Birds Austr., Vol. II., p. 265, 1865 ; Carter, Emu, Vol. III., p. 177, 1904 ; Bryant, *ib.*, Vol. V., p. 25, 1905.

Glottis vigorsii Gray, List Spec. Birds Brit. Mus., pt. III., p. 99, 1844 (India).

Glottis nivigula id., Cat. Mamm. Birds Nepal pres. Hodgson Brit. Mus., p. 138, 1846.

Totanus glottis Middendorff (not Latham) Sibirische Reise, Vol. II., p. 213, 1851 ; Schrenck, Vögel des Amur-Landes, p. 414, 1860 ; Radde, Reisen Suden von Ost-Sibir., p. 327, 1863 ; Seebohm, Geogr. Distr. Charadr., p. 355, 1887 ; Legge, Proc. Austr. Assoc. Adv. Sci., Vol. IV., p. 946, 1892 ; Taczanowski, Mém l'Acad. Imp. Sci. St. Petersb., Ser. VII., Vol. XXXIX., p. 860, 1893 ; North, Birds County Cumberl., p. 111, 1898.

Totanus canescens Salvadori (not Gmelin), Ornith. Papua. e Mol., Vol. III., p. 325, 1882 ; Ramsay, Tab. List Austr. Birds, p. 20, 1888.

Totanus nebularius Stejneger, Bull. U.S. Nat. Mus., No. 29, p. 128, 1885.

Totanus nebularius glottoides id., *ib.*

Glottis nebularius Sharpe, Cat. Birds Brit. Mus., Vol. XXIV., p. 481, 1896 ; Hall, Key Birds Austr., p. 85, 1899 ; Campbell, Nest and Eggs Austr. Birds, p. 814, 1901 ; Berney, Emu, Vol. II., p. 213, 1903 ; *id.*, *ib.*, Vol. IV., p. 47, 1904 ; Hall, Key Birds Austr., p. 85, 1906 ; Berney, Emu, Vol. VI., p. 114, 1907 ; Mathews, Handl. Birds Austral., p. 27, 1908 ; Littler, Handb. Birds Tasm., p. 140, 1910 ; Ogilvie-Grant, Ibis 1910, p. 179.

Tringa nebularia Mathews, Nov. Zool., Vol. XVIII., p. 221, 1912.

DISTRIBUTION. Siberia (breeding), migrating southward to Australia and Tasmania in winter.

* The Plate is lettered *Tringa nebularius*.

THE BIRDS OF AUSTRALIA.

Adult male, in summer-plumage. Head and hind-neck dark brown with white margins to the feathers; mantle and upper-back black with grey edgings, the dark markings becoming more elongated on some of the long scapulars where the margins are grey barred with black; lesser, median, and greater wing-coverts dark brown, some of the major coverts edged with white at the tips, the small marginal-coverts round the bend of the wing also edged with white; bastard-wing, primary-coverts and quills dark brown, the latter paler brown on the inner webs, some of the short inner primaries narrowly tipped with white, the shaft of the first, or outer primary, is white; secondaries greyish-brown, mottled with white on the inner webs, and edged with white at the tips, the long innermost secondaries like the long scapulars; lower-back and the rump white; upper tail-coverts and tail white, barred with brown, the bars much more sparsely shown on the outer feathers of the latter; a ring of short white feathers encircles the eye; fore-head, sides of face, and throat white, with dark central streaks to the feathers; the central lines become larger and more pear-shaped on the sides of the neck, fore-neck, and breast: these markings are more or less broken up into bars on the sides of the body and lateral under tail-coverts; axillaries and under wing-coverts white, barred with brown; greater under wing-coverts uniform grey with white edges; bill brown, basal third leaden-grey; iris blackish-brown; tarsi and feet light grey. Total length 335 mm.; culmen 52, wing 183, tail 80, tarsus 58.

Adult female, in summer-plumage. Similar to the adult male, but larger.

Adult male, in winter-plumage. Differs from the summer-plumage in being greyer and less black on the upper-surface, and by the uniform white under-surface.

The bird in autumn has the dark upper-surface similar to the summer-plumage, and the all-white under-surface like that of the winter-plumage.

Young bird of the year. Similar to the adult in winter-plumage, but differs on the upper-parts where the feathers are more mottled and the margins regularly edged with white.

Nest. A depression in the grass.

Eggs. Clutch, four; ground-colour pale stone, covered with very dark-red blotches and underlying ones of lavender; axis 48-50 mm., diameter 34.

Breeding-season. May, June (Siberia).

MR. J. P. ROGERS, writing from Derby, North-west Australia, says that he found these birds usually on the beaches, but at times they came to the small clay-pans to feed. These are the only Waders he found in the fresh-water. They never associated with other species. He also found them on the Fitzroy River on July 16th, 1911.

Mr. Rogers also found them the wariest of all Totanine Waders on Melville Island, only second to *Numenius cyanopus*.

Mr. Tom Carter says: "The Greenshank has only come under my observation a few times. On January 24th, 1898, I shot a specimen on the bank of the Yardie Creek, and odd birds were seen occasionally in a large mangrove swamp near North West Cape. On November 25, 1905, I shot another on the edge of a stock tank at Wensleydale, Broome Hill, South-west Australia. Another specimen was noted on the edge of the Jacob

EASTERN GREENSHANK.

Remessens River. On all occasions the birds were very wild and difficult to approach within gun shot."

Captain S. A. White writes: "These birds are not regular visitors to South Australia; still they are not uncommon at times. I have seen them running along the sandy shore at the Murray Mouth and on the Coorong."

Mr. J. W. Mellor records: "This bird is by no means plentiful in South Australia. They wade about knee deep in the marshy swamps in solitary ones and pairs. I observed them on Lake Albert in October, 1894, and at Stamsbury, Yorke Peninsula, South Australia, on 15th to 17th April, 1911. Owing to their being so wary, no specimens were obtained."

"A few Greenshanks may be seen every year [Richmond District, North Queensland] nearly always singly, but occasionally three or four together. November, middle to end, appears to be their favourite time of arrival, but I have one early instance—19th September, 1905. 29th March, 1902, is the latest date upon which I have seen them here."*

"While some fished in the pools, and along their edges, thrusting their long bills into the mud, others slept or preened their feathers. Now and then a small party would leisurely take flight to another and more distant part of the beach. All the while I had the birds under observation, there was constant movement, much coming and going. Altogether there must have been some twenty individuals of this species, scattered over different parts of the beach. What made their presence all the more interesting, was the fact that the species is but an irregular visitor to our shores, there being but few records of previous visits."†

Middendorff writes: "Not seen in the North. Bred plentifully on the west side of the Stanovoi Mountains (on May 12th on the lakes of Markolj). From here on it was frequently seen on all the large marshes, on the mountains, and also on the sea coast; and it perched with much noise on the low trees around the marshes.

"Towards the end of August I saw it for the last time in the neighbourhood of the mountains on the border of Manchuria."

Schrenck observes that he did not meet this bird on the lower Amur, on spring-migration, but frequently in the late summer. In both the years he was on that river, young specimens were observed in August on the muddy and moist banks. He mostly found them alone, rarely in pairs or small flocks; they were always very shy, flying out of range with a loud, piercing cry. His specimens were obtained in August.

* Berney, *Emu*, Vol. VI., p. 114, 1907.

† Littler, *Handb. Birds Tasm.*, p. 141, 1910

THE BIRDS OF AUSTRALIA.

Radde records : "This bird only visits the fresh water lake at Kulus-sutajefsk, during Autumn migration, where I shot a young bird on August 22nd, 1856. On September 4th, 1856, I saw it for the last time on the Tarei Nor."

"Dybowski and Godlewski found it common in all the countries visited from Irkutsk to the sea of Japan. They arrive there in the first part of May, and stay for a little while on the banks of the rivers, lakes and sea, and go afterwards to nest elsewhere. On their return they appear in August, and are often found until the middle of September. Their habits do not differ from those of the European birds." (Taczanowski.)

The bird figured and described is a male, collected in New South Wales.

As in most of these Waders, the Eastern form is lighter in every stage of plumage.

GENUS—RHYACOPHILUS.

RHYACOPHILUS Kaup, Skizz. Entwick-Gesch. Nat. Syst.,
p. 140, 1829 *R. glareola.*

Also spelt—

Rhyocophilus Bonaparte, Ann. Sci. Nat., Ser. IV., Vol. I., p. 149, 1854.
Rhynchophilus id., Comptes Rendus Sci. (Paris), Vol. XLIII., p. 597, 1856.

SMALL Totanine Waders with short straight slender bills, long wings, short tail, long legs, and long feet. The culmen is short, straight and slender, with the groove in the upper mandible scarcely extending beyond half its length: it is less than one-fourth the length of the wing and shorter than the metatarsus, and only about equal to the middle toe and claw.

The wings are long and pointed with the first primary longest, and more than twice the length of the tail and more than three times the length of the metatarsus. The tail is comparatively short and rounded, less than half the wing and longer than the metatarsus, but shorter than the metatarsus and exposed tibia.

The metatarsus is of medium length, being less than the tail but longer than the culmen or middle toe: the exposed tibia is however proportionately long, being more than half the length of the metatarsus. The toes are long, the middle toe being two-thirds the length of the metatarsus, longer than the exposed tibia, and little less than the culmen, with the claw exceeding the last named. The webbing of the feet is as in the preceding genus, and a long hind toe is present.

This genus, generally compared with *Tringa* (= *Helodromas* Auct.), seems to me to have more affinity with *Iliornis*.

RHYACOPHILUS GLAREOLA AFFINIS.

EASTERN WOOD-SANDPIPER.

(PLATE 156.)*

- TOTANUS AFFINIS Horsfield, Trans. Linn. Soc. (Lond.), Vol. XIII., p. 191, 1821; Java.
- Totanus affinis Horsfield, Trans. Linn. Soc. (Lond.), Vol. XIII., p. 191, 1821; Selater, Proc. Zool. Soc. (Lond.) 1863, p. 222; Swinhoe, *ib.*, p. 311.
- Tringa littorea Pallas (not Linné), Zoogr. Rosso-Asiat., Vol. II., p. 195, 1827 (Siberia).
- Totanus glareoides Gray, Zool. Miscel., p. 86, 1844 (n.n.)
- Totanus glareola (not Linné) Middendorff, Sibirische Reise, Vol. II., p. 215, 1851; Schrenck, Vögels des Amur-Landes, p. 416, 1861; Swinhoe, Ibis 1861, p. 343; Radde, Reisen Suden von Ost-Sibir., p. 329, 1863; Swinhoe, Ibis 1870, p. 363; Prjevalsky, in Rowley's Ornith. Miscel., Vol. III., p. 88, 1878; Kelham, Ibis 1882, p. 17; Salvadori, Ornith. Papua. e Mol., Vol. III., p. 323, 1882; Stejneger, Bull. U.S. Nat. Mus., No. 29, p. 130, 1885; *id.*, Proc. U.S. Nat. Mus. 1887, p. 133; Seebohm, Geogr. Distr. Charadr., p. 365, 1887; La Touche, Ibis 1892, p. 500; Taczanowski, Mém. l'Acad. Imp. Sci. St. Petersb., Ser. VII., Vol. XXXIX., p. 874, 1893.
- Actitis glareola Blyth, Cat. Birds Mus. As. Soc., p. 267, 1852.
- Rhynchophilus affinis Bonaparte, Comptes Rendus Sci. (Paris), Vol. XLIII., p. 597, 1856.
- Rhyacophilus glareola Sharpe, Cat. Birds Brit. Mus., Vol. XXIV., p. 491, 1896; Mathews, Handl. Birds Austral., p. 27, 1908; *id.*, Emu, Vol. IX., p. 55, 1909.
- Helodromas ochropus (not Linné) Hall, Vict. Nat., Vol. XVIII., p. 163, 1902; *id.*, Emu, Vol. II., p. 65, 1902; *id.*, Key Birds Austr., p. 114, 1906; *id.*, Emu, Vol. VII., p. 142, 1908.
- Tringa glareola Mattingley, Emu, Vol. V., p. 155, 1906; Hall, Key Birds Austr., p. 114, 1906; Mathews, Nov. Zool., Vol. XVIII., p. 222, 1912.

DISTRIBUTION. Siberia (breeding), migrating southward to Australia in winter.

Adult male, in breeding-plumage. Dusky brown above, with blotches of darker brown distributed over the upper-surface; head and hind-neck streaked with white, and white spots distributed over the back and wings; upper wing-coverts for the most part brown, more or less fringed and barred with white; bastard-wing, primary-coverts and quills dark brown, shaft of outer primary white; secondary-quills somewhat paler brown, and edged with white at the tips; the innermost secondaries like the back; upper tail-coverts white, barred with brown; middle tail-feathers brown, barred with white or buffy-white, the outer feathers for the most part white with irregular markings of pale brown; eye-ring white; eyebrow and sides of face minutely spotted with brown; ear-coverts brown, intermixed with white; chin

* The Plate is lettered *Tringa glareola*.

J. G. Keulemans. del

Witnerry & Co.

24

TRINGA GLAREOLA.
(WOOD-SANDPIPER).



EASTERN WOOD-SANDPIPER.

white, the feathers of the lower-throat brown with white margins; fore-neck and breast ash-grey, more or less barred with white; the feathers on the sides of the body white, barred with brown like the under tail-coverts, but more sparsely on the latter; middle of abdomen dull white; axillaries white, regularly barred with brown; under wing-coverts brown, fringed with white, the greater series grey with white tips; bill blackish-brown, base of lower mandible brown; iris dark brown; tarsi and feet light olive-brown. Total length 225 mm.; culmen 31, wing 128, tail 50, tarsus 37.

Adult female. Similar to the adult male but larger.

Adult, in winter-plumage. Differs from the summer-dress in being more uniform on the head and hind-neck, and in having a well-pronounced white superciliary streak; also in having the breast uniform grey.

Nestling, in down. Upper-surface for the most part black, with longitudinal smoky-grey lines on the head, hind-neck, and back; a narrow black loreal streak which cuts through the eye on to the sides of the hinder-crown; entire under-surface white.

Nest. A depression in the earth.

Eggs. Clutch, four; ground-colour bluish, covered more thickly at the larger end with large spots and blotches of dark purplish-red, and underlying ones of lavender; axis 39, diameter 27.

Breeding-season. May, June (Siberia, Middendorff).

THIS bird was first added to the Australian List in 1896, when Vol. XXIV. of the *Catalogue* of the Birds in the British Museum was published, from birds collected by the late Bowyer Bower in North-west Australia. Mr. Mattingly in the *Emu* of ten years later recorded it from Victoria. I now extend its Australian distribution, as I have birds collected in North-west Australia: Northern Territory and Queensland. It can always be distinguished from *Helodromas ocropus* Linné by the white shaft of its outer primary, while the inner wing and axillaries of the former are characteristic, and if once seen no mistake can ever be made between these two.

Mr. J. P. Rogers collected specimens in the North-west of Australia in 1909. Their stomachs contained shell-fish, grasshoppers, and a quantity of animal matter.

Middendorff says: "This bird arrived on the Boganida (70° N. lat.) on May 29th and bred there in large numbers. By the 12th of May we found it frequently on marshy ground, on the west slopes of the Stanovoi Mountains (Mar-Kolj) where it not only waded but also swam about. Later on, when it had paired, it perched on trees and piped a great deal.

"Nearer the ridge of the Stanovoi Mountains it disappeared, and we saw it again for the first time near Udskoj-Ostrog and on the sea-coast; also on the large Schantar Island."

Schrenck writes: "Although not so common as *Totanus glottis*, yet it is found all along the Amur River The first specimen killed on 7/19 of May was in Spring plumage . . . the one shot on 3/15 August had very

THE BIRDS OF AUSTRALIA.

worn feathers, which had quite lost their edge and border spots, which gave the feathers very frayed-out edges."

Radde records: "I found this species, though only females, on the Tarei-nor, and on the eastern slopes of the most southerly Apfel Mountains . . . At that time the birds had collected together in the mountains and were very shy, as their departure was imminent."

"Dybowski and Godlewski found it common from Lake Baikal to the Sea of Japan, on the edge of lakes. They arrive on Southern Lake Baikal in May and go without delay further north. At the end of July they re-appear in great numbers and leave again in the middle of September."

"They certainly nest in the Island of Saghaline, although we have not seen it during nesting-season; our examples were taken on the 9th August (O.S.) on the shores of Nyiskoi Bay" [Nikolski] (Taczanowski).

"Common in S.E. Mongolia about the end of April when migrating, and is plentiful in summer in the Hoang-ho Valley. . . . Is extremely common about Lake Hanka during the spring migration, which commences in the latter part of April and lasts until the middle of May. The autumnal migration takes place in August."*

"A truly freshwater species, frequenting rivers and perching on the 'batangs' or large logs of drift timber (in Borneo) whence its name (Junggit-batang). These birds are frequently seen in small packs, probably families, and fly close under the banks of the river, with a jerking, uneasy flight."†

"Abundant in March and April on the paddy-fields about Foochow; it passes again in September and October. It is also common in spring on the Swatow marshes."‡

"This species is a rather common one in Bering Island, breeding on the great swamps of the northern part and in the broader and deeper valleys, for instance in Kamennij, Staraja Gavanskij Pad, etc. They arrive after the middle of May, and their musical performances or 'playing' was often watched by me during the latter part of the month."§

The bird figured and described was collected in North-west Australia on February 15th, 1909, by Mr. J. P. Rogers.

The Eastern form of this species is smaller and paler: it seems to be almost a rule amongst these Wading birds that the Western birds should be darker and of larger size.

* Prjevalsky, in *Rowley's Ornith. Miscel.*, Vol. III., p. 88, 1878.

† Selater, *Proc. Zool. Soc.* (Lond.) 1863, p. 222.

‡ La Touche, *Ibis* 1892, p. 500.

§ Stejneger, *Bull. U.S. Nat. Mus.*, No. 29, p. 130, 1885.

GENUS—B A R T R A M I A .

BARTRAMIA Lesson, Traité d'Orn., p. 553, 1831 .. Type *B. longicauda*.

Also spelt *Bartramius* Bonaparte, Revue Mag. Zool., Ser. II., Vol. IX., p. 59, 1857.

Actidurus Bonaparte, Giorn. Arcad. (Roma), Vol. LII.,

p. 208, 1831 Type *B. longicauda*.

Also spelt *Actiturus* Bonaparte, Comp. List Birds Europe and N. Amer., p. 51, 1838.

Euliga Nuttall, Manuel Ornith. U.S. and Canada,

Vol. II., p. 167, 1834 Type *B. longicauda*.

Also spelt *Euligia* Cabanis, Journ. für Ornith. 1856, p. 418.

MEDIUM Totanine Waders with short bills, long wings, long tails, long legs, and long toes.

The culmen is short and straight, the tip slightly swollen and decurved ; the groove in the upper mandible extends for more than half the length of the culmen, which is scarcely longer than the middle toe and claw and less than two-thirds the length of the metatarsus.

The wings are very long, with the first primary longest. The tail is very long and wedge-shaped, more than half the length of the wing, and three times the length of the culmen. The metatarsus is more than half the length of the tail but less than twice the middle toe ; the exposed portion of the tibia is more than half the length of the metatarsus and equal to the middle toe. Tarsus regularly scutellated before and behind.

The toes are long, and the middle toe is more than half the length of the metatarsus and little less than the culmen ; the webbing between the toes is as in the preceding Totanoid genera. A long hind toe is present.

BARTRAMIA LONGICAUDA.

LONG-TAILED SANDPIPER.

(PLATE 157.)

- TRINGA LONGICAUDA Bechstein, Kurze Uebers Vögel, p. 453, 1811; North America.
Tringa longicauda Bechstein, Kurze Uebers Vögel, p. 453, 1811.
Totanus variegatus Vieillot, Nouv. Dict. d'Hist. Nat., Vol. VI., p. 397, 1816 (South America).
Totanus melanopygius *id.*, *ib.*, p. 401 (United States).
Totanus bartramia Temminck, Manuel d'Orn., 2nd ed., Vol. II., p. 650, 1820.
Bartramia laticauda Lesson, Traité d'Orn., p. 553, 1831.
Totanus bartramius Bonaparte, Giorn. Arcad. (Roma), Vol. LII., p. 208, 1831.
Actitis bartrami Naumann, Vögel Deutschl., Vol. VIII., p. 43, 1836.
Actiturus bartramius Bonaparte, Comp. List Birds Europe and N. Amer., p. 51, 1838;
 Gould, Handb. Birds Austr., Vol. II., p. 242, 1865; *id.*, Birds Austr., Suppl., pl. 77,
 1867; Coues, Birds of the North-west, p. 502, 1874.
Totanus longicauda D'Orbigny, in Ramon de la Sagra's Hist. d'Ile de Cuba, Aves, p. 237,
 1839.
Tringoides bartramius Gray, Genera Birds, Vol. III., p. 574, 1846.
Actiturus bartrami Lichtenstein, Nomencl. Av. Mus. Zool. Berol., p. 92, 1854.
Euligia bartramia Cabanis, Journ. für Ornith. 1856, p. 418.
Bartramius longicaudus Bonaparte, Revue Mag. Zool., Ser. II., Vol. IX., p. 59, 1857.
Actiturus longicaudus Newton, ed. Blasius List Birds Europe, p. 18, 1862; Dresser, Birds
 Europe, Vol. VIII., p. 119, pl. 562, 1877; Ramsay, Tab. List Austr. Birds, p. 20,
 1888.
Actitis bartramius Schlegel, Mus. Pays-Bas, Vol. V., Scolopaces, p. 78, 1864.
Bartramia longicauda Degland and Gerbe, Ornith. Europe, Vol. II., p. 231, 1867; Ridgway,
 Proc. U.S. Nat. Mus., Vol. III., p. 201, 1880; Baird, Brewer, and Ridgway, Water
 Birds N. Amer., Vol. I., p. 296, 1884; Ridgway, Man. N. Amer. Birds, p. 169,
 1887; Legge, Proc. Austr. Assoc. Adv. Sci., Vol. IV., p. 949, 1892; Sharpe, Cat.
 Birds Brit. Mus., Vol. XXIV., p. 509, 1896; Campbell, Nests and Eggs Austr.
 Birds, p. 815, 1901; Hall, Key Birds Austr., p. 85, 1906; Mathews, Handl. Birds
 Austral., p. 27, 1908; *id.*, Nov. Zool., Vol. XVIII., p. 222, 1912; Rockwell,
 Condor, Vol. XIV., p. 128, 1912.



J.G. Keulemans, del

Witherby & Co

$\frac{3}{5}$

BARTRAMIA LONGICAUDA.
(LONG-TAILED SANDPIPER).

LONG-TAILED SANDPIPER.

Actiturus longicaudatus Gundlach, Journ. für Ornith. 1881, p. 401.

Totanus bartrami, Seebohm, Hist. Brit. Birds, Vol. III., p. 110, 1885; *id.*, Geogr. Distr. Charadr., p. 376, 1887.

DISTRIBUTION. North and South America (Europe and Australia accidental).

Adult male. General colour above black, the feathers everywhere margined with sandy-rufous and white; head black with sandy-rufous edges to the feathers; hind-neck rufous with dark brown centres to the feathers, giving a streaked appearance; mantle and back black, the feathers edged with rufous; lower-back, middle upper tail-coverts and rump uniform black, the lateral upper tail-coverts barred with buff and black; lesser wing-coverts dark brown fringed with sandy-rufous; greater-coverts olive-brown barred with darker brown, fringed on the sides with sandy-rufous and tipped with white; bastard-wing blackish, tipped with white; primary-coverts black with pale edges to some of the inner ones; primary-quills dark brown on the outer webs, the inner webs barred with white; first primary mottled and barred with brown and white, shaft also white; inner primaries barred with pale and dark brown, fringed and tipped with white, the secondaries similarly coloured; the long innermost secondaries like the back; middle tail-feathers greyish-brown tinged with rufous and barred with black, becoming rufous on the outer feathers which are also barred with black and broadly tipped with white; throat white; sides of face, lower-throat, and upper-breast sandy-buff, with narrow brown streaks; abdomen and under tail-coverts buffy-white; sides of body sandy-rufous barred with brown; axillaries and under wing-coverts white barred with dark brown; bill greenish-yellow, culmen and tip dark brown; iris hazel; tarsi and feet yellowish-green. Total length 288 mm.; culmen 29, wing 165, tail 82, tarsus 47.

Adult female. Similar to the adult male.

Young. "Similar to the adult, but the buff of the head, jugulum, wings, etc., much deeper, the streaks on the fore-neck and jugulum much less distinct, and the back plain black, the feathers bordered with buff" (Baird, Brewer, and Ridgway).

Nestling, in down. Upper-surface black, rufous, and white; lores, sides of the face, collar on the hind-neck, and the entire under-parts white, with a tinge of pale buff on the abdomen; lower-flanks, thighs, and under tail-coverts marked with rufous and black.

Nest. "A rather deep depression in the ground, sparingly lined with fine weed stems, grasses and a few bits of manure, and one or two small feathers" (Rockwell).

Eggs. Clutch, four; ground-colour light stone, sparingly marked all over, but more at the larger end, with spots of dark chestnut to yellowish-brown, and underlying ones of lavender; axis 41.5 to 43 mm., diameter 32 to 32.5.

Breeding-season. June (Coues).

GOULD first added this bird to the Australian List in 1865, in his *Handbook*, p. 242, where he says: "I am indebted to the Directors of the Museum at Sydney for the loan of a very fine example of this species, which they kindly permitted to be sent to England for my inspection. It was shot by an old sportsman during the Snipe season of 1848, near the water-reservoir, in the vicinity of Sydney."

In 1888, Ramsay, in his *Tabular List*, p. 20, gave Queensland, New South Wales, and the Interior, as its Australian range.

THE BIRDS OF AUSTRALIA.

Legge, *Proc. Austr. Ass. Adv. Sci.*, Vol. IV., p. 950, 1892, added Victoria to the List, on the authority of Ramsay.

I have never heard however of a second specimen, and consider it a *very* doubtful constituent of the Australian List.

“Bartram’s Tattler, or the ‘Upland Plover,’ as it is generally called by sportsmen, is a bird of wide and general dispersion in the Western Hemisphere, while its casual occurrence in Europe is attested, and it is even stated to have been found in Australia. It inhabits at different seasons nearly all of North America, and in winter pushes its migration even to Central and South America, as well as into the West Indies. But it has not, to my knowledge, been found in the United States west of the Rocky Mountains. It occurs in summer as far north as the Yukon, though thousands of the birds also breed within the limits of the United States.

“In most parts of the West, between the Mississippi and the Rocky Mountains, this Tattler, commonly known as the ‘Prairie Pigeon,’ is exceedingly abundant during the migrations—more so than I can suppose it to be in settled portions of the country. In Texas, I am told, it occurs in flocks ‘of thousands.’ In Kansas, during the month of May, it migrates in great numbers, being scattered over the prairies everywhere, and it is so tame that it may be destroyed without the slightest artifice; I have seen it just escape being caught with the crack of a coach-whip. Passing northward, it enters Dakota, Iowa, and Minnesota the same month. About the middle of May it reaches the latitude of Fort Randall, with great numbers of Golden Plover and Esquimaux Curlew, flocking the prairies everywhere. Its breeding habits may be studied with perfect success in Northern Dakota, where it is the most abundant of all the waders. We can scarcely cross a piece of prairie, or travel a mile along the roads anywhere, without seeing it. Its gentle and unsuspicious ways, its slender and graceful shape, and the beauty of its markings, are all alike attractive, while the excellence of its flesh is another point not less interesting, but less favorable for the bird. Too many are destroyed at this season when they are pairing, for few can resist the tempting shots, as the birds step along the road-side or stand erect in the scanty grass, gazing at the passing vehicle with misplaced confidence. By the end of May those that are to breed further north have passed on, while the remainder have paired and are about to nest.

“As soon as they are mated the pairs keep close company, being rarely beyond each other’s call, and are oftenest seen rambling together through the grass. At such times they seem very slender, as indeed they are, overtopping the scanty herbage with their long, thin necks, swaying continually in graceful motion. Their ordinary note at this, as at other seasons, is a

LONG-TAILED SANDPIPER.

long-drawn, soft, mellow whistle, of a peculiarly clear, resonant quality ; but beside this, they have a note peculiar, I believe, to this period of their lives. This is a very loud, prolonged cry, sounding more like the whistling of the wind than a bird's voice ; the wild sound, which is strangely mournful, is generally uttered when the bird, just alighted, holds its wings for a moment perpendicularly, before adjusting them over its back. It is frequently heard in the night, all through the breeding-season, and is, I think, one of the most remarkable outcries I ever heard. There is yet another note that the Tattler utters, chiefly when disturbed breeding ; this is a harsh scream, quickly and often repeated, much like that given by other waders under the same circumstances.

“In Northern Dakota the eggs are mostly laid by the second week in June ; the time is quite constant ; and, so far as I know, only one brood is raised each year. The nest, like that of other birds breeding on the open prairie, is hard to find, as there is nothing whatever to guide a search, and the herbage of the prairie, flimsy as it usually is at this season, is sufficient to hide the variegated eggs which assimilate with the colors of their surroundings. The nesting is quite similar to that of the Curlews and Godwits. I have found nests on the open prairie without landmarks ; but, perhaps, oftener they are placed in the vicinity of pools and sloughs, or along the edge of a piece of woods—always, however, in an open spot. The female is a close setter, and will suffer herself to be almost trodden upon before she will quit her charge—indeed nests are oftenest found by the fluttering of the female from under one's feet. Early in incubation she generally flies to a little distance and re-alights, walking leisurely about the grass ; but if the eggs be far advanced she is more solicitous, and will feign lameness, in hope of drawing attention from the nest. The male soon joins her, and the pair hover low over the ground, flying slowly around with incurved wings, uttering their cries of distress ; and as several pairs are usually nesting within hearing, they, too, become alarmed, and the general clamor is continued until the intruder withdraws. The scene is much the same as when the breeding-places of the Curlews, Willets, or Godwits are invaded.

“The nest is flimsy—merely a few straws to keep the eggs from the ground, in a slight depression. The eggs are ordinarily four in number, as usual among waders. The numerous specimens I have collected are somewhat notably constant in characters, both of size and coloration. In dimensions they range from 1.90 by 1.30 inches, to 1.70 by 1.25, averaging about 1.75 by 1.28. The ground is pale clay-color, or a very light drab—sometimes the palest possible creamy-brown—with scarcely a shade of olivaceous. They are spotted all over, but much more thickly at the larger end, with

THE BIRDS OF AUSTRALIA.

rather small, sharp, surface markings of umber-brown, overlaying a smaller number of purplish-gray shell-markings. However thickly they may be sprinkled, the spots are rarely, if ever, confluent into masses of any size, the largest I have seen not exceeding the diameter of a pea. These larger blotches are irregular in contour, but the smaller ones are mostly rounded.

“Young birds are abroad late in June—curious little creatures, timid and weak, led about by their anxious parents, solicitous for their welfare, and ready to engage in the most unequal contests in their behalf. When half-grown, but still in the down, the little creatures have a curiously clumsy, top-heavy look; their legs look disproportionately large, like those of a young colt or calf; and they may be caught with little difficulty, as they do not run very well. I once happened upon a brood, perhaps two weeks old, rambling with their mother over the prairie. She sounded the alarm, to scatter her brood, but not before I had secured one of them in my hand. I never saw a braver defence attempted than was made by this strong-hearted though powerless bird, who, after exhausting her artifices to draw me in pursuit of herself, by tumbling about as if desperately wounded, and lying panting with out-stretched wings on the grass, gave up hope of saving her young in this way, and then almost attacked me, dashing close up and retreating again to renew her useless onslaught. She was evidently incited to unusual courage by the sight of her little one struggling in my hand. At this downy stage the young birds are white below, finely mottled with black, white, and rich brown above; the feet and under mandible are light colored; the upper mandible is blackish.

“Although these Tattlers are generally dispersed over the prairies during the summer, yet they affect particular spots by preference. Away from the river valleys, such spots are the numerous depressions of rolling prairie, often of great extent, which are moist or even watery at some seasons, and where the vegetation is most luxuriant. Here they gather almost into colonies. Riding into some such spot in July, when the young birds are being led about by their parents, some old bird more watchful than the rest, or nearest to the person approaching, gives the alarm with a loud outcry—the young scatter and hide, and all the old birds are soon on wing; hovering in the air, often at a great height, crossing each other's path, and ceaselessly vociferating their displeasure. I have often seen a dozen or twenty overhead at once, all from a little spot only a few acres in extent. Later in the season, when all the summer's broods are on the wing, they make up into flocks, often of great extent, and old and young together assume the ordinary routine of their lives. They leave these northern regions early. I saw none after the forepart of September.

LONG-TAILED SANDPIPER.

"The food of this Tattler is mainly insects, especially grasshoppers, of which they must devour enormous quantities in the aggregate. They also feed on the small animal substances, as well as upon various berries. I have found them very well conditioned even in the spring, and in the fall they grow surprisingly fat. They are a tender and well-flavoured bird. Being so delicate, they are easily killed, dropping to a touch of the finest shot.

"There is but little difference in the plumage of these birds at any season, and their size is also quite constant. The sexes are not distinguishable by any outward marks (though the female averages slightly larger than the male) and the young closely resemble the parents upon their first complete feathering. In measuring a great number of fresh specimens, I found the length to vary only from 11.50 to 12.75; the extent 21.50 to 23.00; wing 6.25 to 7.00; the tail is about 3.60; the tarsus about 1.75; the bill, 1.00 to 1.25, measured along the culmen."*

* Coues, *Birds of the North-west*, p. 503, 1874

GENUS—A R E N A R I A .

ARENARIA	Bechstein, Ornith. Taschenb., p. 462A, 1803	Type	<i>A. leucophæa.</i>
<i>Calidris</i>	Illiger, Prodrömus, p. 249, 1811	 Type	<i>A. leucophæa.</i>
<i>Crocethia</i>	Billberg, Synops. Faunæ Scand., Vol. I., pt. II., tab. A, and p. 132, 1828	 Type	<i>A. leucophæa.</i>
<i>Morinellus</i>	Gray, List Genera Birds, 2nd ed., p. 90, 1841.		

SMALL Waders with short straight bills, long wings, short tails, very short legs and toes, and *no* hind toe. The culmen is short and straight with the tip somewhat expanded and slightly decurved; the groove in the upper mandible is long, extending almost to the tip; the culmen is about equal to the very short metatarsus and about half the length of the tail.

The wings are long and pointed with the first primary longest. The tail is short, rounded, and less than half the length of the wing. The metatarsus is very short and only about one-fifth the length of the wing; it is regularly scutellate in front and behind. The toes are very short, the middle toe being about half the length of the metatarsus; there is no webbing between the toes.



J. G. Keulemans. del

Witherby & Co

$\frac{3}{4}$
ARENARIA LEUCOPHŒA.
(SANDERLING).

ARENARIA LEUCOPHÆA TRIDACTYLA.

EASTERN SANDERLING.

(PLATE 158.)*

TRINGA TRIDACTYLA Pallas, Zoogr. Rosso-Asiat., Vol. II., p. 198, 1827 ; Lake Baikal, Asia.

Tringa tridactyla Pallas, Zoogr. Rosso-Asiat., Vol. II., p. 198, 1827.

Tringa (Calidris) arenaria Middendorff, Sibirische Reise, Vol. II., p. 219, 1851.

Calidris arenaria (not Linné) Swinhoe, Proc. Zool. Soc. (Lond.) 1863, p. 315 ; Stejneger, Bull. U.S. Nat. Mus., No. 29, p. 122, 1885 ; Newton, Rec. Austr. Mus., Vol. II., p. 22, 1892 (New South Wales) ; Taczanowski, Mém. l'Acad. Imp. Sci. St. Petersb., Ser. VII., Vol. XXXIX., p. 841, 1893 ; Sharpe, Ibis 1894, p. 541 ; Campbell, Proc. Roy. Soc. Vict., Vol. VII., N.S., p. 201, 1895 ; Sharpe, Cat. Birds Brit. Mus., Vol. XXIV., p. 526, 1896 ; Campbell, Nests and Eggs Austr. Birds, p. 816, 1901 ; Carter, Emu, Vol. III., p. 177, 1904 ; Hall, Key Birds Austr., p. 87, 1906 ; Mathews, Handl. Birds Austral., p. 27, 1908.

Arenaria leucophæa Mathews, Nov. Zool., Vol. XVIII., p. 222, 1912.

DISTRIBUTION. Siberia (breeding), migrating southward to Australia in winter.

Adult male, in summer-plumage. Head and neck all round rufous with narrow brown shaft-streaks ; a narrow crescentic white line immediately below the eye ; back and scapulars blackish the feathers fringed with rufous or white, some of the rufous margins mottled with black ; lesser wing-coverts brown, median and greater-coverts tipped with white ; bastard-wing and primary-coverts dark brown ; primary-quills also dark brown on the outer webs and at the tips, inner webs paler brown, shafts white except at the extreme tips, some of the inner primaries white on the outer webs ; secondaries brown, some of the inner ones almost white, the innermost like the back ; upper tail-coverts blackish with white tips, the long central ones entirely blackish ; middle tail-feathers dark brown, blackish towards the tips, the outer feathers much paler and mottled or dusted with brown and white ; breast, abdomen, and under tail-coverts white as also the axillaries and under wing-coverts, the small marginal coverts show minute blackish dots. Total length 207 mm. ; culmen 25, wing 125, tail 51, tarsus 25.

Adult female, in summer-plumage. Similar to the adult male, but larger and not quite so bright rufous.

Adult male, in winter-plumage. Upper-parts pale grey with dark shaft-lines, including the head, hind-neck, sides of neck, median wing-coverts, and scapulars ; lesser upper wing-coverts dark brown ; greater wing-coverts dark brown broadly tipped with white ; bastard-wing and primary-coverts dark brown or blackish, some

* The Plate is lettered *Arenaria leucophæa*.

THE BIRDS OF AUSTRALIA.

of the latter tipped with white ; primary-quills also dark brown on the outer webs and at the tips, much paler and inclining to white on the inner webs, some of the inner primaries white on the outer webs towards the base ; secondaries for the most part white with brown at the tips, the long innermost secondaries like the back ; upper tail-coverts rather darker than the back, the lateral ones broadly fringed and tipped with white ; middle tail-feathers dark brown with white on the outer webs near the base and narrowly fringed with white, the outer feathers similar but paler ; fore-head, sides of face, and entire under-surface white including the under tail-coverts, axillaries, and under wing-coverts.

The bird in autumn differs from the summer and winter-plumages in having the dark brown feathers on the crown of the head, back, and scapulars fringed with grey ; feathers on the side of the neck and breast brown with grey edgings ; throat and abdomen white.

Nest. A depression in the ground.

Eggs. "Clutch four ; the eggs ovoconical, somewhat oblong ; have the back-ground green, more or less bright or a little darker, with the lower spots reddish-grey, the middle ones brown and the upper ones dark or blackish-brown ; on the eggs with light back-ground the spots are deeper and vice-versa ; the spots in general small, more or less round, mixed with streaks, numerous and almost equally distributed over all the surface ; axis 38-45 mm., diameter 26 ' to 26.5.' " (Taczanowski.)

THIS bird was first added to the Australian List in 1892 by Newton (*Rec. Austr. Mus.*, Vol. II., p. 22) from specimens obtained at Sandy Cove, New South Wales, on April 20th, 1844, by Macgillivray.

In 1895, Campbell (*Proc. Roy. Soc. Vict.*) recorded it from North-west Australia, from specimens collected by Carter ; and I have skins from Northern Territory as well as West Australia.

Mr. Tom Carter sends me the following : "The Sanderling was first noted and obtained by me at Point Cloates on the 18th July, 1894, when I shot one from amongst a party of waders. Since that date I regularly observed them about Point Cloates and they could be seen in almost any month of the year, but were more numerous in the summer months. I have shot them in April, July, September, October, November, and December in various years. I have also seen odd birds near Albany in February."

Middendorff (*l.c.*) says this bird "arrived on the Taimyr River (74° N. lat.) on 4th of June and was seen as far as 75° N. lat. It became more plentiful as we advanced north, but was always in small bands of 5 or 6 birds, never in flocks like *Tringa cinclus* with which it often associates.

"At a distance it could easily be distinguished from the latter bird, through its habit of running along by the edge of the water and not right in it.

"I conjecture that this bird breeds preferably on the shore of the Polar Sea. One specimen was shot on the Boganida on 8th June and a second on the 10th."

"This bird occurs at Amoy and on the South China coast only in September, October, April and May, its southward destination being apparently

EASTERN SANDERLING.

in lower latitudes and its northward much higher, though it is not noted from Amoorland. A few are occasionally met with the winter through.”*

“Rare during the migrating season. A single male was shot out of a small flock on Bering Island, September 19th, 1882.” (Stejneger, *l.c.*)

“Not rare at Koultouk on the Southern Baikal, and on the Onon in Dauria, more rarely found in the neighbourhood of the Tsouroukhaytouy on the Argoun. It inhabits the borders of lakes and rivers. It arrives in August and goes in the middle of September. During the spring it is very rare.” (Godlewski.)

Of the birds figured and described, the male in the foreground was collected at Point Cloates, West Australia, on October 20th, 1901, by Mr. Tom Carter, the other on Melville Island, Northern Territory, by Mr. J. P. Rogers.

The specific name used here is that proposed in the book known as the “Vroeg” Catalogue, and about which quite a considerable amount of literature has recently arisen (Sherborn and Richmond, *Smithson. Miscel. Collect.* (Qty. Issue), Vol. 47, pp. 332-347, 1905; Van Oort, *Notes from Leyd. Mus.*, Vol. XXXIV., p. 66, 1911; Mathews, *Austral Av. Rec.*, Vol. I., p. 29, 1912; Witmer-Stone, *Auk*, Vol. XXIX., p. 205, 1912). I consider the description given in the body of the work in this case quite recognisable and available, and therefore use it here. It is as follows (p. 32):—

“Zand Pleviertje (*Tringa leucophæa*). Is was grooter dan een Leeurik. Het lyf is boven aschgrauw, het voorste lid van de vlerken en de slagpennen zyn zwartagtig, de bek en pooten zyn zwart. Valt aan de Noordsche Zee-kusten. [By nader nazien bevinden wy dat deeze eigentlyk een Strand-loper is.]”

In the *Adumbratiunculæ* (p. 7) this bird is called:—

“Trynga (*alba*) alba, supra canescens, remigibus nigricantibus, interius albis. Trynga proprie est, non Charadrius. Supra collique lateribus incana, rhachibus nigricantibus. Magn. Canuti. Remiges nigricant, interne albae & primariarum aliquot interiores exterius quoque; tectrices secundariae apice albae. Humeri fusci Cauda inaequalis, rectricibus 2 mediis longioribus, omnibus fusco canescentibus.”

Though long series of this bird are at hand no breeding-birds in numbers are available. There would however seem to be good reason for suggesting that in this bird as in most of the Waders, the American bird in full breeding-plumage will be found to be much paler than the European form, with the Eastern Asiatic form intermediate.

I separated the collection in the British Museum into localities, with the result that the immature and winter birds gave the following results:

* Swinhoe, *Proc. Zool. Soc.* (Lond.) 1863, p. 315.

THE BIRDS OF AUSTRALIA.

American birds are larger and paler than European birds, while Eastern Asiatic are slightly smaller than European ones. It must be remembered that the females are larger than the males, and that older birds are larger than younger ones.

When Palmer introduced to the notice of American ornithologists the fact that the American Turnstone deserved recognition, he gave some pages of details and measurements. It would have been easy to have done so in the present instance, but I consider it wiser to allow Americans to measure and compare the birds themselves. I may however just indicate that the first noticeable character of the American subspecies is its longer bill. Here at once a confusion was unavoidable unless only carefully-sexed birds were used for comparison, for European females have almost the same length bills as American males, while, if immature or one-year-old birds are included, the figures are at once lowered.

For the forms recognised I would use:—

Arenaria leucophœa leucophœa (Vroeg); Europe.

Av. measurements: ♂ culmen 23; wing 122 mm.
 ♀ ,, 25 ,, 125 ,,

Arenaria leucophœa tridactyla (Pallas); Eastern Asia.

Av. measurements ♂ culmen 23; wing 119 mm.
 ♀ ,, 25 ,, 122 ,,

Arenaria leucophœa rubida (Gmelin); America.

Av. measurements: ♂ culmen 26; wing 127 mm.
 ♀ ,, 28 ,, 130 ,,

GENUS—PISOBIA.

PISOBIA Billberg, Synops. Faunæ Scand., Vol. I,
pt. II., p. 136, 1828 Type *Pisobia minuta*.

Leimonites Kaup, Skizz. Entwick-Gesch. Nat. Syst.,
p. 37, 1829 Type *P. temminckii*.

Also spelt *Limonites* Agassiz, Index Univers., p. 211, 1846.

Actodromas Kaup, Skizz. Entwick-Gesch. Nat. Syst.,
p. 55, 1829 Type *P. minuta*.

Also spelt—

Actodroma Kaup, Skizz. Entwick-Gesch. Nat. Syst., p. 194, 1829.

Actodromus Gray, Gen. Birds, Vol. III., p. 579, note, 1846.

Actinodromus Bonaparte, Comptes Rendus Sci. (Paris), Vol. XLIII., p. 1024, 1856.

Actidromas Olphe Galliard, Contr. Faunæ Ornith. l'Eur. Occid., fasc. xiv., p. 78, 1891.

Heteropygia Coues, Proc. Acad. Nat. Sci. Philad.
1861, p. 191 Type *P. fuscicollis*.

Delopygia, *id.*, *ib.*, note.

SMALLEST Waders with short straight slender bills, long wings, comparatively long tails, short legs, and short feet. The culmen is short, straight, and slender, with the groove in the upper mandible extending almost to the tip: the tip is somewhat expanded and faintly punctulate. The culmen is shorter than the metatarsus, and less than half the length of the tail.

The wings are long and pointed with the first primary longest. The tail, which is strongly doubly emarginate, is less than half the length of the wing but more than one-third, and is twice the length of the culmen. The metatarsus is short, regularly scutellate both in front and behind, longer than the culmen and also the middle toe. The toes are all cleft to the base and a hind toe is present.

The bird described by Horsfield as *Totanus damacensis* differs from the preceding in its longer legs and especially longer toes and claws. The hind toe and claw is also very long. The metatarsus is more than a fourth the length of the wing, and the middle toe is longer than the culmen: in typical members of the genus *Pisobia* the metatarsus is less than one-fourth the wing and the middle toe is shorter than the culmen. These differences seem to constitute a subgeneric distinction that may be emphasized by the new subgeneric name of *NEOPISOBIA*.

THE BIRDS OF AUSTRALIA.

Sharpe's treatment of these little Stints in the *Catalogue* of the Birds in the British Museum is not happy. In Vol. XXIV. he admits two genera, *Limonites* and *Heteropygia*, with the differential diagnosis as follows (p. 520):—

Tarsus and culmen practically equal in length.

A hind-toe present; bill not spatulate.

Tarsus about equal to middle-toe and claw

Limonites.

Tarsus longer than middle-toe and claw

Heteropygia.

In *Limonites* is admitted *minuta*, *ruficollis*, *minutilla*, *damacensis*, and *temmincki*; and as members of *Heteropygia* he placed *maculata*, *acuminata*, *bairdi*, and *fuscicollis*. But the majority of these latter species have the culmen noticeably smaller than the tarsus, while *minuta*, placed in *Limonites*, has the tarsus much longer than the middle toe and claw.

Consequently some other means of differentiating the species must necessarily be found if more than one genus is admitted. In the American Ornithological Union's *Checklist*, 3rd edition, 1910, pp. 113-115, the American species were all placed under *Pisobia* (= *Limonites*), viz. *aurita* (= *acuminata*), *maculata*, *fuscicollis*, *bairdi*, *minutilla*, and *damacensis*. This seems a somewhat strange conclusion, as in the same place *Pelidna* and *Erolia* are admitted as distinct valid genera.

When Coues wrote up the "Monograph of the Tringæ" (*Proc. Acad. Nat. Sci. Philad.* 1861), on p. 190 he diagnosed the genus *Actodromas* (= *Pisobia*), and then separated *Heteropygia* thus: "with *Tringa bonapartei* (= *fuscicollis*) as type . . . differs in the stouter bill, more expanded at tip: in the much less extent of the encroachment of the feathers on the lower mandible; in the longer legs, the tarsus rather exceeding the middle toe; in the entire absence of the brownish or ashy suffusion on the jugulum, and in the white upper tail covers."

At the same time he placed *maculata* in the typical section, not in *Heteropygia*.

In his diagnosis of the genus *Actodromas* (= *Pisobia*) he wrote: "Tail rather long, deeply doubly emarginate, the central feathers much projecting." I find this quite correct for the smaller species, *minuta*, etc., and also for *fuscicollis*, the type of *Heteropygia*; but the tail in *acuminata* is long and regularly wedge-shaped: in addition this species is much larger, more stoutly built, with more powerful legs and feet, etc. I am therefore using for it Gould's generic name *Limnocinclus*.



H. Grönvold del.

Witherby & C^o.

$\frac{9}{10}$
PISOBIA DAMACENSIS.
(LONG-TOED STINT).
WINTER PLUMAGE.

$\frac{9}{10}$
PISOBIA RUFICOLLIS.
(LITTLE STINT).
WINTER PLUMAGE

PISOBIA MINUTA RUFICOLLIS.

LITTLE STINT.

(PLATES 159 and 160.)

TRYNGA RUFICOLLIS Pallas, Reise Russ. Reichs., Vol. III., p. 700, 1776 ; Siberia.*Trynga ruficollis* Pallas, Reise Russ. Reichs., Vol. III., p. 700, 1776.*Tringa albescens* Temminck and Laugier, Planch. Col. d'Ois., Vol. I., pl. 41, 1823 (Oceania=Australia) ; Swinhoe, Ibis 1863, p. 413 ; Ramsay, Proc. Linn. Soc. N.S.W., Vol. II., p. 198, 1878 ; Salvadori, Ornith. Papua. e Mol., Vol. III., p. 315, 1882 ; Ramsay, Tabl. List Austr. Birds, p. 20, 1888.*Trynga salina* Pallas, Zoogr. Rosso-Asiat., Vol. II., p. 199, 1827 (Mongolia).*Calidris australis* Lesson, Traité d'Orn., p. 558, 1831 (substitute-name for *albescens*).*Calidris albescens* Cuvier, Règne Anim., 2nd ed., Vol. I., p. 526, 1829.? *Tringa pusilla* (not Linné) S. Muller, Verh. Nat. Gesch. Land en Volkend, p. 23, 1840 (n.n.)*Schœniclus albescens* Gould, Birds Austr., Vol. VI., pl. 31, 1848.*Actodromus australis* Bonaparte, Comptes Rendus Sci. (Paris), Vol. XLIII., p. 596, 1856 ; Gould, Handb. Birds Austr., Vol. II., p. 257, 1865.*Actodromus albescens* Bonaparte, Comptes Rendus Sci. (Paris), Vol. XLIII., p. 596, 1856.*Tringa temminckii* (not Leisler), Blakiston, Ibis 1862, p. 330.*Tringa damacensis* (not Horsfield), Swinhoe, *ib.* 1863, p. 413.? *Tringa minuta* (not Linné) Rosenberg, Nat. Tijdschr. Nederl. Ind., Vol. XXV., p. 255, 1863.*Tringa salina* Dybowski and Parrex, Journ. für Ornith. 1868, p. 337.*Tringa ruficollis* Walden, Trans. Zool. Soc. (Lond.), Vol. IX., p. 234, 1875 ; La Touche, Ibis 1892, p. 499 ; Legge, Proc. Austr. Assoc. Adv. Sci., Vol. IV., p. 956, 1892 ; Taczanowski, Mém. l'Acad. Imp. Sci. St. Petersb., Ser. VII., Vol. XXXIX., p. 920, 1893 ; Ogilvie-Grant, Ibis 1910, p. 179 ; Buturlin, Emu, Vol. XI., p. 97, 1911.*Tringa minutilla* (not Vieillot) Bean, Proc. U.S. Nat. Mus., Vol. V., p. 164, 1882.*Tringa minuta ruficollis* Seebohm, Hist. Brit. Birds, Vol. III., p. 205, 1885 ; *id.*, Geogr. Distr. Charadr., p. 437, 1887.*Actodromus ruficollis* Stejneger, Bull. U.S. Nat. Mus., No. 29, p. 118, 1885,*Limonites ruficollis* Sharpe, Cat. Birds Brit. Mus., Vol. XXIV., p. 545, 1896 ; Campbell,

THE BIRDS OF AUSTRALIA.

Nests and Eggs Austr. Birds, p. 818, 1901 ; Hall, Emu, Vol. II., p. 66, 1902 ; Berney, *ib.*, p. 213, 1903 ; Carter, *ib.*, Vol. III., p. 177, 1904 ; Hall, Key Birds Austr., p. 89, 1906 ; Berney, Emu., Vol. VI., p. 114, 1907 ; Littler, Handb. Birds Tasm., p. 142, 1910.

Pisobia ruficollis Mathews, Handl. Birds Austral., p. 28, 1908 ; *id.*, Emu, Vol. IX., p. 4, 1909.

Pisobia minuta ruficollis Mathews, Nov. Zool., Vol. XVIII., p. 222, 1912.

DISTRIBUTION. Siberia (breeding), migrating southward to Australia and Tasmania in winter.

Adult male, in summer-plumage. Head and neck all round rufous, like the back and scapulars, with dark centres to the feathers ; the long innermost secondaries dark brown with chestnut margins ; bastard-wing, lesser, median, and greater wing-coverts dark brown, the latter tipped with white, which forms a wing-bar ; primary-coverts dark brown, the inner ones tipped with white, primary- and secondary-quills also dark brown with white shafts ; rump and upper tail-coverts dark brown, the feathers edged with white, the long central upper tail-coverts black ; middle tail-feathers dark brown, the outer feathers pale grey ; base of forehead and chin whitish ; sides of breast grey with blackish centres to the feathers ; remainder of the under-surface white, with a tinge of buff on the abdomen, sides of body, and under tail-coverts ; bill and feet black ; eyes brown. Total length 152 mm. ; culmen 17, wing 102, tail 43, tarsus 21.

Adult female, in summer-plumage. Similar to the male, but rather more grey on the feathers of the upper-surface, throat, and sides of face ; it is also paler.

Adult male, in winter-plumage. Upper-parts grey, with dark shaft-lines to the feathers of the head, back, scapulars, and wings ; the small marginal upper wing-coverts dark brown like the bastard-wing and primary-coverts, major-coverts tipped with white which forms a wing-bar ; primary-quills dark brown with white shafts ; secondaries brown, with white on the inner webs ; rump, upper tail-coverts, and tail much the same as in the summer-plumage ; forehead, sides of face, and a faintly indicated superciliary streak white, like the chin, throat, and the entire under-surface.

Another bird, collected in May and still in winter-plumage, differs in being somewhat paler grey, and in having the dark central spot to the feathers on the side of the breast larger.

An adult female, collected in March, is just beginning to assume the breeding-dress, which is by the appearance of rufous on the throat and top of the head, and the chestnut on the margins of the scapulars.

Adult female, in winter-plumage. Similar to the adult male.

Nest and Eggs undescribed.

MR. J. P. ROGERS found this bird near Derby, North-west Australia. They were in small flocks in December, but the flocks increased in size till they became very numerous in February, 1911. They were usually seen on the beach. Small flocks of ten to twelve were seen at Roebuck Bay in May, June, and July, some of these birds being partly in breeding-plumage. They were also collected on Melville Island, Northern Territory, up till February, 1912.

LITTLE STINT.

Mr. Tom Carter says odd birds could be seen at Point Cloates, West Australia, at all times of the year.

Mr. Charles Belcher writes: "This species makes its annual appearance along the southern shores of Victoria oftener not later than the end of July, after an absence of barely three months. Enormous flocks may be observed during the Australian Spring and Summer, the pure white breasts of the little birds showing like a bright flash as the flock wheels in the air. In general appearance on the wing it closely resembles *Ægialitis ruficapillus*, but the flocks of *P. ruficollis* are usually much larger and fly to a greater height."

Mr. J. W. Mellor records: "This pretty little sandpiper is fairly abundant in South Australia, frequenting open marshy swamp-land and sea-beaches when the tide is low, going in flocks of scores, and feeding on very small swamp and marine insect life. I have shot them at the Reedbeds near Adelaide, while waiting for ducks on a moonlight night. They fly very noiselessly, and alight on the water's edge like a little flock of moths, and start to run along the muddy water's edge, keeping in a little flock all the time. I have noted them in the open beach at the mouth of the Port Adelaide River, along the beach on the eastern side of St. Vincent's Gulf. I also saw them very plentiful on the Coorong in October, 1896, and again a year or two later when visiting there."

"The small parties of these birds that visit our salt-marshes [in Formosa] rise altogether, when disturbed, with a loud twittering note. When one is wounded, its companions fly round and about it to try and render it assistance, in the manner of Curlews, and often keep by the fallen until it dies, thus too frequently endangering their own lives. I have not observed this sympathy with the distress of its fellows displayed by any other species of *Tringa*."*

"Passes the Foochow district in April and May, and is very abundant. It returns in September."†

"This species arrives at Bering Island late in May in rather large flocks, but does not stay long. None were met with during the whole summer, until, in the first half of September, they took a short rest on the shores of our island before commencing their long travel to the southward."‡

"According to Dybowski and Godlewski this bird is not rare, and arrives in the neighbourhood of the Rivers Onon and Argoun in Dauria in the middle of May, and in Autumn it is found during the whole of September.

"We have found it in August in the island of Saghaline on the shores of the bay of Nyiskoi, where at the end of the month they are found in enormous flocks" [Nikolski]. (Taczanowski.)

* Swinhoe, *Ibis* 1863, p. 414.

† La Touche, *ib.* 1892, p. 498.

‡ Stejneger, *Bull. U.S. Nat. Mus.*, No. 29, p. 119, 1885.

THE BIRDS OF AUSTRALIA.

Of the birds figured and described the one in full breeding-plumage was killed in Japan in April, 1907; and the one in winter-plumage at Point Torment, North-west Australia, on December 27th, 1910, by Mr. J. P. Rogers.

In winter-plumage this species is scarcely separable from the typical *P. minuta*, being very little paler; in the summer-plumage however it is well differentiated, but still it can only be considered a well-marked subspecies, being the direct geographical representative of the former.



H. Grönvold. del.

Witherby & Co

$\frac{9}{10}$
PISOBIA DAMACENSIS.
(LONG-TOED STINT).
SUMMER PLUMAGE.

$\frac{9}{10}$
PISOBIA RUFICOLLIS.
(LITTLE STINT).
SUMMER PLUMAGE.

PISOBIA DAMACENSIS.

LONG-TOED STINT.

(PLATES 159 and 160.)

TOTANUS DAMACENSIS Horsfield, Trans. Linn. Soc. (Lond.), Vol. XIII., p. 192, 1821 ;
Java.

Totanus damacensis Horsfield, Trans. Linn. Soc. (Lond.), Vol. XIII., p. 192, 1821.

Tringa subminuta Middendorff, Sibirische Reise, p. 222, 1851 (Siberia); Schrenck, Vögels
des Amur-Landes, p. 424, 1860 ; Radde, Reisen Suden von Ost-Sibir., p. 333,
1863 ; Seebohm, Geogr. Distr. Charadr., p. 438, 1887 ; Taczanowski, Mém l'Acad.
Imp. Sci. St. Petersb., Ser VII., Vol. XXXIX., p. 914, 1893 ; Buturlin, Emu, Vol. XI.,
p. 97, 1911.

Tringa minuta (not Leisler) Blyth, Cat. Birds Mus. As. Soc. Bengal, p. 270, 1852.

Actodromus subminuta Bonaparte, Comptes Rendus Sci. (Paris), Vol. XVIII., p. 596, 1856.

Tringa damacensis Swinhoe, Proc. Zool. Soc. (Lond.) 1863, p. 316.

Tringa salina (not Pallas) Gray, Handl. Gen. Spec. Birds Brit. Mus., Vol. III., p. 50, 1871.

Actodromas salina (not Pallas) Salvadori, Ann. Mus. Civ. Gen., Vol. V., p. 324, 1874.

Tringa ruficollis (not Pallas) Waldon, Trans. Zool. Soc. (Lond.), Vol. IX., p. 234, 1875.

Actodromas damacensis Stejneger, Proc. U.S. Nat. Mus., Vol. VI., p. 71, 1883 ; *id.*, Bull.
U.S. Nat. Mus., No. 29, p. 116, 1885.

Limonites damacensis Sharpe, Cat. Birds Brit. Mus., Vol. XXIV., p. 553, 1896 ; Hall, Key
Birds Austr., p. 117, 1906.

Pisobia damacensis Mathews, Handl. Birds Austral., p. 28, 1908 ; *id.*, Nov. Zool.,
Vol. XVIII., p. 222, 1912.

DISTRIBUTION. Siberia (breeding), migrating southward to Australia in winter.

Adult male, in summer-plumage. General colour above black, rufous, and grey ; crown
of head, back, and scapulars black, the feathers margined with rufous ; upper
hind-neck inclining to brown, with grey margins ; lesser, median, and greater
wing-coverts brown, with pale or whitish margins at the tips ; bastard-wing and
primary-coverts dark brown, the latter tipped with white ; primary-quills also
dark brown, the outer, or first, primary with a white shaft ; secondaries pale brown,
fringed with white at the tips, the long innermost secondaries dark brown with
rufous margins ; rump and upper tail-coverts black, the lateral feathers white ;
middle tail-feathers blackish with pale margins, the outhter feathers grey with
white edges ; superciliary line whitish ; sides of face and sides of neck buff, with
pale brown streaks becoming broader on the sides of the neck and narrower again

THE BIRDS OF AUSTRALIA.

on the lower-throat; chin and upper-throat white like the breast, abdomen, and under tail-coverts; sides of breast like the sides of the neck; axillaries white as also the median under wing-coverts, the marginal coverts and the greater series pale brown; bill black, base of lower mandible olive-brown; iris dark brown; feet greenish-yellow. Total length 163 mm.; culmen 18, wing 93, tail 40, tarsus 22.

Adult female. Similar to the adult male.

Adult, in winter-plumage. Differs from the male in summer-dress by the absence of rufous on the feathers of the upper-surface, which is replaced by olive margins; the grey on the hind-neck as well as the dark grey on the fore-neck and chest, and the marginal coverts on the under-wing being almost black.

Nest and Eggs. Unknown.

Breeds in eastern and central Siberia, not further north than 66° N. in eastern-most parts of its range, and much less northerly further inland (Buturlin).

THIS bird was first added to the Australian List by Sharpe in 1896, in the *Catalogue* of the Birds in the British Museum, from an adult male specimen in winter-plumage, collected by the late Bowyer Bower on the Fitzroy River in North-west Australia in 1886.

This species was first described from Java, by Horsfield, but it breeds in Siberia, where Middendorff and others record it. The latter also redescribed it under the name "*subminuta*."

"The long-toed Stint arrives in Bering Island in large flocks during the latter part of May, and are then met with on sandy beaches, where the surf has thrown up large masses of sea-weed, busily engaged in picking up the numerous small crustaceans, etc., with which the weeds abound. Most of the birds stay only a few days, going further north, while a small number remain over summer, probably breeding sparingly on the large swamp behind the village. My efforts to find the nests were unsuccessful, but I shot birds near Zapornaja Reshka on the 17th and 22nd of June, and on the 7th of August." (Stejneger, *l.c.*)

Schrenck shot specimens on the 5th (17th) July on the lower Amur.

Middendorff, who collected this bird in Siberia, says: "I have only collected two specimens of this *Tringa* on my journey; one on the western heights of the Stanovoi Mountains (Kokan River) on May 19th, and the other near the mouth of the Uda, on June 30th.

"This bird so closely resembles *Tringa minuta*, that I have only just now, after minute examination, determined the difference.

"In shape, size and colour, it differs from *T. minuta* in summer-plumage, only in its markedly long toes and the dark coloured shafts of the wing.

"The middle toe of this bird measures, including the nail, 25.5 mm. long, of which the nail is only 4.5 mm., the tips of the two outer toe-nails reach to the root of the middle toe-nail; the hind toe is 7 mm. long, including the nail which is 2 mm. long.

LONG-TOED STINT.

"If we compare these measurements with the toe measurements of *T. minuta* and *T. temminckii*, we find certain points of similarity, but neither in Siberia nor in Europe have I been able to find amongst more than 60 specimens of *T. minuta* and *T. temminckii*, one specimen with the middle toe more than 19.5 mm. All writers agree in this."

Radde says: "A male was shot on the 12th May, 1856, on the Tarei-nor, in full breeding-plumage. By this discovery in North Mongolia its distribution has been greatly extended westward."

"Dybowski and Godlewski found in Dauria and in Lake Baikal towards the end of May. According to Nikolski it certainly nests on the island of Saghaline." (Taczanowski.)

Of the birds figured and described, the male in full breeding-plumage was shot on the Amur, in May, 1886. The one in winter-plumage was shot on the Fitzroy River in North-west Australia, on September 24th of the same year, by the late Bowyer Bower and is the only known Australian record.

Long known by Middendorff's name of *subminuta*, it was originally described by Horsfield and the Horsfieldian name was used by ornithologists having access to the British Museum, where the type is preserved. The description given by Horsfield is, of course, quite inadequate to identify the species, no mention being made of the long toes and no measurements given.

GENUS—LIMNOCINCLUS.

LIMNOCINCLUS Gould, Handb. Birds Austr., Vol. II.,

p. 254, 1865 Type *L. acuminatus*.

SMALL Waders with short straight bills, long wings, short tails, short legs, but stout and long toes.

The culmen is short, straight, and slightly expanded at the tip, the groove in the upper mandible extending almost to the tip; it is shorter than the metatarsus and about equal to the middle toe alone.

The wings are long and pointed with the first primary longest. The tail is less than half the length of the wing, and is just twice the length of the metatarsus. It is strongly wedge-shaped. The metatarsus is short but stout, regularly scutellate in front and behind; quite appreciably longer than the culmen, also than the middle toe and claw. The hind toe is comparatively short; all the toes are cleft to the base.

When Gould wrote up his *Handbook* of the Birds of Australia, he introduced the generic name *Limnocinclus* without giving any reasons or generic diagnosis. He simply wrote (Vol. II., p. 254, 1865): "The two species of this genus range over many degrees of latitude, the *Limnocinclus pectoralis* of America being one of them, the following species the other. They, or at least the Australian bird, inhabit marshy districts and the borders of rivers, and run about among the grass and herbage much after the manner of the true Snipes. Of their nidification little or nothing has yet been recorded, and I would especially direct the attention of Australian ornithologists to this point so far as it regards the bird inhabiting their country."



[17] [18] [19] [20] [21] [22] [23] [24] [25] [26] [27] [28] [29] [30] [31] [32] [33] [34] [35] [36] [37] [38] [39] [40] [41] [42] [43] [44] [45] [46] [47] [48] [49] [50] [51] [52] [53] [54] [55] [56] [57] [58] [59] [60] [61] [62] [63] [64] [65] [66] [67] [68] [69] [70] [71] [72] [73] [74] [75] [76] [77] [78] [79] [80] [81] [82] [83] [84] [85] [86] [87] [88] [89] [90] [91] [92] [93] [94] [95] [96] [97] [98] [99] [100] [101] [102] [103] [104] [105] [106] [107] [108] [109] [110] [111] [112] [113] [114] [115] [116] [117] [118] [119] [120] [121] [122] [123] [124] [125] [126] [127] [128] [129] [130] [131] [132] [133] [134] [135] [136] [137] [138] [139] [140] [141] [142] [143] [144] [145] [146] [147] [148] [149] [150] [151] [152] [153] [154] [155] [156] [157] [158] [159] [160] [161] [162] [163] [164] [165] [166] [167] [168] [169] [170] [171] [172] [173] [174] [175] [176] [177] [178] [179] [180] [181] [182] [183] [184] [185] [186] [187] [188] [189] [190] [191] [192] [193] [194] [195] [196] [197] [198] [199] [200] [201] [202] [203] [204] [205] [206] [207] [208] [209] [210] [211] [212] [213] [214] [215] [216] [217] [218] [219] [220] [221] [222] [223] [224] [225] [226] [227] [228] [229] [230] [231] [232] [233] [234] [235] [236] [237] [238] [239] [240] [241] [242] [243] [244] [245] [246] [247] [248] [249] [250] [251] [252] [253] [254] [255] [256] [257] [258] [259] [260] [261] [262] [263] [264] [265] [266] [267] [268] [269] [270] [271] [272] [273] [274] [275] [276] [277] [278] [279] [280] [281] [282] [283] [284] [285] [286] [287] [288] [289] [290] [291] [292] [293] [294] [295] [296] [297] [298] [299] [300] [301] [302] [303] [304] [305] [306] [307] [308] [309] [310] [311] [312] [313] [314] [315] [316] [317] [318] [319] [320] [321] [322] [323] [324] [325] [326] [327] [328] [329] [330] [331] [332] [333] [334] [335] [336] [337] [338] [339] [340] [341] [342] [343] [344] [345] [346] [347] [348] [349] [350] [351] [352] [353] [354] [355] [356] [357] [358] [359] [360] [361] [362] [363] [364] [365] [366] [367] [368] [369] [370] [371] [372] [373] [374] [375] [376] [377] [378] [379] [380] [381] [382] [383] [384] [385] [386] [387] [388] [389] [390] [391] [392] [393] [394] [395] [396] [397] [398] [399] [400] [401] [402] [403] [404] [405] [406] [407] [408] [409] [410] [411] [412] [413] [414] [415] [416] [417] [418] [419] [420] [421] [422] [423] [424] [425] [426] [427] [428] [429] [430] [431] [432] [433] [434] [435] [436] [437] [438] [439] [440] [441] [442] [443] [444] [445] [446] [447] [448] [449] [450] [451] [452] [453] [454] [455] [456] [457] [458] [459] [460] [461] [462] [463] [464] [465] [466] [467] [468] [469] [470] [471] [472] [473] [474] [475] [476] [477] [478] [479] [480] [481] [482] [483] [484] [485] [486] [487] [488] [489] [490] [491] [492] [493] [494] [495] [496] [497] [498] [499] [500] [501] [502] [503] [504] [505] [506] [507] [508] [509] [510] [511] [512] [513] [514] [515] [516] [517] [518] [519] [520] [521] [522] [523] [524] [525] [526] [527] [528] [529] [530] [531] [532] [533] [534] [535] [536] [537] [538] [539] [540] [541] [542] [543] [544] [545] [546] [547] [548] [549] [550] [551] [552] [553] [554] [555] [556] [557] [558] [559] [560] [561] [562] [563] [564] [565] [566] [567] [568] [569] [570] [571] [572] [573] [574] [575] [576] [577] [578] [579] [580] [581] [582] [583] [584] [585] [586] [587] [588] [589] [590] [591] [592] [593] [594] [595] [596] [597] [598] [599] [600] [601] [602] [603] [604] [605] [606] [607] [608] [609] [610] [611] [612] [613] [614] [615] [616] [617] [618] [619] [620] [621] [622] [623] [624] [625] [626] [627] [628] [629] [630] [631] [632] [633] [634] [635] [636] [637] [638] [639] [640] [641] [642] [643] [644] [645] [646] [647] [648] [649] [650] [651] [652] [653] [654] [655] [656] [657] [658] [659] [660] [661] [662] [663] [664] [665] [666] [667] [668] [669] [670] [671] [672] [673] [674] [675] [676] [677] [678] [679] [680] [681] [682] [683] [684] [685] [686] [687] [688] [689] [690] [691] [692] [693] [694] [695] [696] [697] [698] [699] [700] [701] [702] [703] [704] [705] [706] [707] [708] [709] [710] [711] [712] [713] [714] [715] [716] [717] [718] [719] [720] [721] [722] [723] [724] [725] [726] [727] [728] [729] [730] [731] [732] [733] [734] [735] [736] [737] [738] [739] [740] [741] [742] [743] [744] [745] [746] [747] [748] [749] [750] [751] [752] [753] [754] [755] [756] [757] [758] [759] [760] [761] [762] [763] [764] [765] [766] [767] [768] [769] [770] [771] [772] [773] [774] [775] [776] [777] [778] [779] [780] [781] [782] [783] [784] [785] [786] [787] [788] [789] [790] [791] [792] [793] [794] [795] [796] [797] [798] [799] [800] [801] [802] [803] [804] [805] [806] [807] [808] [809] [810] [811] [812] [813] [814] [815] [816] [817] [818] [819] [820] [821] [822] [823] [824] [825] [826] [827] [828] [829] [830] [831] [832] [833] [834] [835] [836] [837] [838] [839] [840] [841] [842] [843] [844] [845] [846] [847] [848] [849] [850] [851] [852] [853] [854] [855] [856] [857] [858] [859] [860] [861] [862] [863] [864] [865] [866] [867] [868] [869] [870] [871] [872] [873] [874] [875] [876] [877] [878] [879] [880] [881] [882] [883] [884] [885] [886] [887] [888] [889] [890] [891] [892] [893] [894] [895] [896] [897] [898] [899] [900] [901] [902] [903] [904] [905] [906] [907] [908] [909] [910] [911] [912] [913] [914] [915] [916] [917] [918] [919] [920] [921] [922] [923] [924] [925] [926] [927] [928] [929] [930] [931] [932] [933] [934] [935] [936] [937] [938] [939] [940] [941] [942] [943] [944] [945] [946] [947] [948] [949] [950] [951] [952] [953] [954] [955] [956] [957] [958] [959] [960] [961] [962] [963] [964] [965] [966] [967] [968] [969] [970] [971] [972] [973] [974] [975] [976] [977] [978] [979] [980] [981] [982] [983] [984] [985] [986] [987] [988] [989] [990] [991] [992] [993] [994] [995] [996] [997] [998] [999] [1000]

Witherby & Co

$\frac{4}{5}$
EROLIA ACUMINATA
(SHARP-TAILED STINT)

LIMNOCINCLUS ACUMINATUS.

SHARP-TAILED STINT.

(PLATE 161.)*

TOTANUS ACUMINATUS Horsfield, Trans. Linn. Soc. (Lond.), Vol. XIII., p. 192, 1821 ;
Java.

Totanus acuminatus Horsfield, Trans. Linn. Soc. (Lond.), Vol. XIII., p. 192, 1821.

Tringa australis (not Gmelin) Jardine and Selby, Illus. Ornith., Vol. II., pl. 91, 1830
(Australia).

Schœniclus australis (not Gmelin) Gray, List Spec. Birds Brit. Mus., pt. III., p. 105, 1844 ;
Gould, Birds Austr., Vol. VI., pl. 30, 1847 ; Sturt, Narr. Exp. Centr. Austr.,
Vol. II., App., p. 50, 1849.

Tringa rufescens (not Vieillot) Middendorff, Sibirische Reise, p. 221, 1851.

Actiturus australis (not Gmelin) Bonaparte, Comptes Rendus Sci. (Paris), Vol. XLIII.,
p. 597, 1856.

Tringa acuminata Swinhoe, Proc. Zool. Soc. (Lond.) 1863, p. 316 ; Whitely, Ibis 1867,
p. 205 ; Salvadori, Ornith. Papua. e Mol., Vol. III., p. 313, 1882 ; Seebohm, Geogr.
Distr. Charadr., p. 441, 1887 ; Buller, Birds New Zeal., Vol. II., p. 37, 1888 ;
Ramsay, Tab. List Austr. Birds, p. 20, 1888 ; Legge, Proc. Austr. Assoc. Adv. Sci.,
Vol. IV., 1892, p. 950 ; Seebohm, Ibis 1893, p. 181, pl. 5 ; Taczanowski, Mém.
l'Acad. Imp. Sci. St. Petersb., Ser. VII., Vol. XXXIX, p. 908, 1893 ; Dresser, Birds
Europe, Suppl., p. 363, 1896 ; North, Trans. Roy. Soc. South Austr., Vol. XXII.,
p. 159, 1898 ; *id.*, Birds County Cumberl., p. 112, 1898.

Limnocinclus acuminatus Gould, Handb. Birds Austr., Vol. II., p. 254, 1865 ; Buller,
Trans. New Zeal. Inst. 1877, Vol. X., p. 197, 1878.

Limnocinclus australis (not Gmelin), Potts, Trans. New Zeal. Inst. 1872, Vol. V., p. 198,
1873

Tringa crassirostris (not Temminck and Schlegel) Taczanowski, Journ. für Ornith. 1873,
p. 103.

Pelidna acuminata Salvadori, Ann. Mus. Civ. Gen., Vol. V., p. 323, 1879.

Actodromas acuminata Ridgway, Proc. U.S. Nat. Mus., Vol. III., p. 199, 1880 ; Baird,
Brewer, and Ridgway, Water Birds N. Amer., Vol. I., p. 235, 1884 ; Stejneger,
Bull. U.S. Nat. Mus., No. 29, p. 115, 1885.

* The Plate is lettered *Erolia acuminata*.

THE BIRDS OF AUSTRALIA.

Tringa pectoralis Swinhoe, Ibis 1893, p. 97.

Heteropygia acuminata Sharpe, Cat. Birds Brit. Mus., Vol. XXIV., p. 566, 1896 ; Rothschild, Av. Laysan, p. 255, 1900 ; Campbell, Nests and Eggs Austr. Birds, p. 819, 1901 ; Hutton, Trans. New Zeal. Inst. 1900, Vol. XXXIII., p. 255, 1901 ; Hall, Emu, Vol. II., p. 66, 1902 ; Berney, *ib.*, p. 213, 1903 ; Carter, *ib.*, Vol. III., p. 177, 1904 ; Berney, *ib.*, Vol. IV., p. 47, 1904 ; Hartert, Nov. Zool., Vol. XII., p. 202, 1905 ; Hall, Key Birds Austr., p. 86, 1906 ; Berney, Emu, Vol. VI., p. 114, 1907 ; Mathews, Handl. Birds Austral., p. 28, 1908 ; Dove, Emu, Vol. VII., p. 158, 1908 ; Littler, Handb. Birds Tasm., p. 143, 1910 ; Ogilvie-Grant, Ibis 1910, p. 179 ; Legge, Emu, Vol. X., p. 51, 1910.

Heteropygia aurita Mathews, Handl. Birds Austral., p. 28, 1908 ; *id.*, Emu, Vol. IX., p. 4, 1909 ; *id.*, *ib.*, p. 55.

Pisobia aurita Auk, Vol. XXV., p. 366, 1908.

Pisobia maculata acuminata Mathews, Nov. Zool., Vol. XVIII., p. 222, 1912.

DISTRIBUTION. Siberia and Alaska (breeding), migrating southward to Australia and Tasmania in winter ; accidental in Europe.

Adult male. Upper-parts dark brown with paler brown bases and ferruginous or grey margins to the feathers of the head, hind-neck, back, scapulars, rump, and central upper tail-coverts ; sides of rump and lateral upper tail-coverts white with dark shaft-streaks, some of the long coverts have a dark submarginal line ; lesser and marginal upper wing-coverts dark brown narrowly edged with ash-grey, the median-coverts greyish-brown with darker shaft-lines, the greater coverts more uniform brown with pale edges and broadly fringed with white at the tips ; bastard-wing and primary-coverts dark brown, the latter edged with white at the tips, more conspicuously on the inner ones ; marginal coverts on outer edge of wing dark brown fringed with white ; primary-quills dark brown, paler on the inner webs and at the tips, the shafts partially white, the secondary-quills similar but the inner ones paler and more broadly edged with white ; central tail-feathers dark brown fringed with ferruginous, the outer feathers pale brown and edged with white ; a circle of short white feathers surrounds the eye ; forehead, lores, a line over the eye, sides of face, and throat white, with dark pear-shaped spots on the middle of the feathers, which become larger and coarser on the ear-coverts, sides of neck, lower-throat, and chest which are tinged with ferruginous, some of the feathers on the sides of the chest and breast are more or less grey ; breast and sides of body paler with dark V-shaped markings to the feathers ; middle of abdomen white ; under tail-coverts white with dark lanceolate markings to the feathers ; under wing-coverts dark brown broadly fringed with white, the greater series greyish-brown with white borders ; under side of quills also greyish-brown, paler on the inner webs at the basal portion, and with conspicuous white shafts ; bill brown, base of lower mandible pale brown ; iris brown ; feet and legs olive. Total length 230 mm. ; culmen 25, wing 125-130, tail 55, tarsus 30.

Adult female. Similar to the adult male.

Immature. Head, upper-back, and scapulars black, with rufous or white edgings to the feathers ; hind-neck dark brown, the feathers margined with buffy-grey ; lesser, median, marginal, and greater wing-coverts dark brown, edged with white at the tips, inclining to grey on the inner coverts ; bastard-wing and primary-coverts dark brown, some of the latter narrowly tipped with white ; primary- and secondary-quills also dark brown, the latter fringed with white at the tips ; lower-back, rump, and upper tail-coverts dull black, the feathers of the latter

SHARP-TAILED STINT.

margined with rufous at the tips ; the lateral upper tail-coverts white, with black shaft-lines ; middle tail-feathers dark brown, edged with rufous, the outer feathers pale brown with white margins ; throat, lores, and eyebrow whitish ; sides of face, sides of neck, fore-neck, and sides of breast buff with dark narrow shaft-lines ; middle of breast and sides of body uniform sandy-buff ; abdomen and under tail-coverts dull white, with dark shaft-streaks to the latter ; axillaries and under wing-coverts white ; the marginal coverts dark brown, edged with white, the greater under wing-coverts grey, tipped with white ; bill brown, base of lower mandible olive-brown ; iris brown ; tarsi and feet olive-yellow. Total length 215 mm. ; culmen 25, wing 128, tail 56, tarsus 30.

Nest and Eggs. Unknown.

Breeds in Siberia.

CAPTAIN S. A. WHITE writes : "These birds move very quietly over the mud or shallow water, uttering a sharp call all the time. When congregated prior to migrating, they are in large flock. When they rise and wheel and turn, they show the dark brown of the back ; the lighter undersurface shine brightly in the sun."

Mr. Tom Carter says : "The Sharp-tailed Stint was never noted at Point Cloates, but was always to be seen in the summer months at a mangrove swamp near the North-west Cape. It is also to be seen in flocks near Albany in February and March."

Mr. Charles Belcher reports : "This bird is probably after the Snipe the best known of the migrants that visit Australia, annually from Asia. It comes in flocks to Southern Victoria about September and leaves again in the following May. The birds are good eating and are commonly exposed for sale in poulterers' shops in Melbourne. It is most plentiful near the sea, but I have found it occurring in large numbers in Goulburn Valley in Summer ; the attraction probably being the irrigation water."

Mr. J. W. Mellor observes : "These birds were once very abundant at the Reedbeds, near Adelaide, South Australia, where they used to congregate in flocks, and feed in the swamps where the River Torrens loses itself in the marshes and reeds and flags. They fly very fast, and are a good mark for shooters, and I have seen a score or more knocked down at a shot fired into them as they pass along in a flock. They were very plentiful on Lakes Alexandria and Albert, and I saw large flocks of them there in the early Seventies, where they track along the water's edge, and wade about the soft watery mud as the water recedes in the summer time. They arrive in South Australia about October.

"Generally to be found in small parties of four or five, but as many sometimes as thirty, wading not like the *Ægialitis*, where the bare expanse of mud meets the water, but rather in backwaters where the swollen stream

THE BIRDS OF AUSTRALIA.

has flooded the grass land, or where the tops of the water-grass and aquatic herbage just push their heads above the surface.”*

“Usually it is October before the Stints reach Wyangarie [Richmond District, North Queensland], and some seasons I do not catch sight of them till November; however, this year (1906) a pair of them have broken all their previous records by arriving here on 23rd September. They leave again in March as a rule, but I noted them here in 1900 on 6th April.”†

“They display a peculiar habit of jerking up their tails whilst feeding or when about to fly.”‡

“Of this species I only obtained young specimens on Bering Island during the autumnal migration of 1882. From the middle of September and during the following three weeks they were observed both on the tundra near the great lake and on the rocky beach of the ocean searching for Gammarids. They were very shy and mostly single or in small families. Larger flocks were never seen.”§

Middendorff shot one in full breeding-dress on June 30th on the South coast of the Sea of Ochotsk.

Swinhoe (*Proc. Zool. Soc.* (Lond.) 1863, p. 316) found it very common on marshes near Pekin in August; a few at Amoy in April and May in almost full summer-dress.

The immature bird figured and described was collected on Parry’s Creek, North-west Australia, on September 26th, 1908, by Mr. J. P. Rogers.

There has recently been quite a confusion regarding the correct nomination of this bird, and as I am probably to blame for some of the confusion, I here endeavour to rectify it to the best of my judgment.

Long known as *Tringa acuminata*, though Gould had introduced the genus *Limnocinclus* for the species, it then became familiarly accepted by American writers as *Actodromas acuminata*, probably following Coues’s lead when he referred the similar American bird, *A. maculata*, to that genus. It was transferred by Sharpe (in the *Cat. Birds Brit. Mus.*, Vol. XXIV., p. 566, 1896) to *Heteropygia* along with *maculata*, though when Coues introduced *Heteropygia* he had deliberately retained *maculata* in *Actodromas*. From 1896 to 1908 Australian and most other ornithologists accepted that combination. When Sharpe worked through the Watling Drawings (*Hist. Coll. Brit. Mus.* (Nat. Hist.), Vol. II., p. 147, 1906), he wrote that Drawing No. 244, upon which was based Latham’s *Tringa aurita*, was a figure of

* Berney, *Emu*, Vol. II., p. 213, 1903.

† *id.*, *ib.*, Vol. VI., p. 114, 1907.

‡ Keartland, *Trans. Roy. Soc. South Austr.*, Vol. XXII., p. 160, 1898

§ Stejneger, *Bull. U.S. Nat. Mus.*, No. 29, p. 115, 1885.

SHARP-TAILED STINT.

H. acuminata. Not at that time questioning Sharpe's determination, I replaced *H. acuminata* by *H. aurita* in my *Handlist of the Birds of Australasia*, p. 28, 1908. About the same time American ornithologists, also accepting Sharpe's identification, made the same alteration in the specific name, but also replaced *Heteropygia* by *Pisobia*, not admitting any distinction, generic or subgeneric, between the species Sharpe had distributed in *Limonites* and *Heteropygia*. *Pisobia* of Billberg, 1828, had been shown to have priority over *Limonites* Kaup, 1829. Re-examining the Watling Drawings, I at once noted that Sharpe had simply made a mistake, and that there was no question about the identity of drawing No. 244, which was that of *Actitis hypoleucos*. Sharpe's reference to *H. acuminata* seems to have been simply a slip, as it will be noted that he made no mention of the priority of *aurita* over *acuminata* nor the need of displacement, as he did with regard to most of the other names which needed emendation through his study of the Watling figures. I therefore at once put on record this fact (*Nov. Zool.*, Vol. XVIII., p. 7, 1911), but unfortunately before that was done the third edition of the American Ornithological Union's *Checklist* had appeared, and therein (p. 113, 1910) appears *Pisobia aurita* (Latham) for this bird.

In my "Reference List" (*Nouv. Zool.*, Vol. XVIII., p. 222, 1912) I accepted the generic *Pisobia* and called this form *Pisobia maculata acuminata*.

This usage was based upon a casual examination of the specimens, following the *Catalogue* of the Birds in the British Museum. In Vol. XXIV. the species are described by Sharpe who (p. 564) fully detailed *Heteropygia acuminata*, and then of *H. maculata* wrote: "Similar to *H. acuminata* but never so rufous, with a more blackish head contrasting with the ashy-brown of the hind-neck. It may always be distinguished from *H. acuminata* by the greater extent of the ashy-fulvous colour, which reaches from the upper throat to the chest and is thickly and regularly streaked with dusky blackish, instead of being rufous with black spots . . . The young bird appears to have almost as much striping on the throat and breast as the old ones: in this respect it differs from the young of *H. acuminata*, where the stripes are confined to the lower-throat and sides of neck . . . There are, however, some specimens from British Columbia which are intermediate, and appear to justify Mr. Seebohm's belief that the two species intergrade."

Seebohm (*Geogr. Distr. Charadr.*, pp. 441 and 443, 1887) had given figures of the tails of *Tringa acuminata* and *Tringa acuminata pectoralis*, and these figures show each to have a regularly wedge-shaped tail. His conclusions read: "From each other they are much more difficult to

THE BIRDS OF AUSTRALIA.

diagnose, so much so indeed that it is scarcely doubtful that they are only subspecifically distinct"; and further gave particulars:—

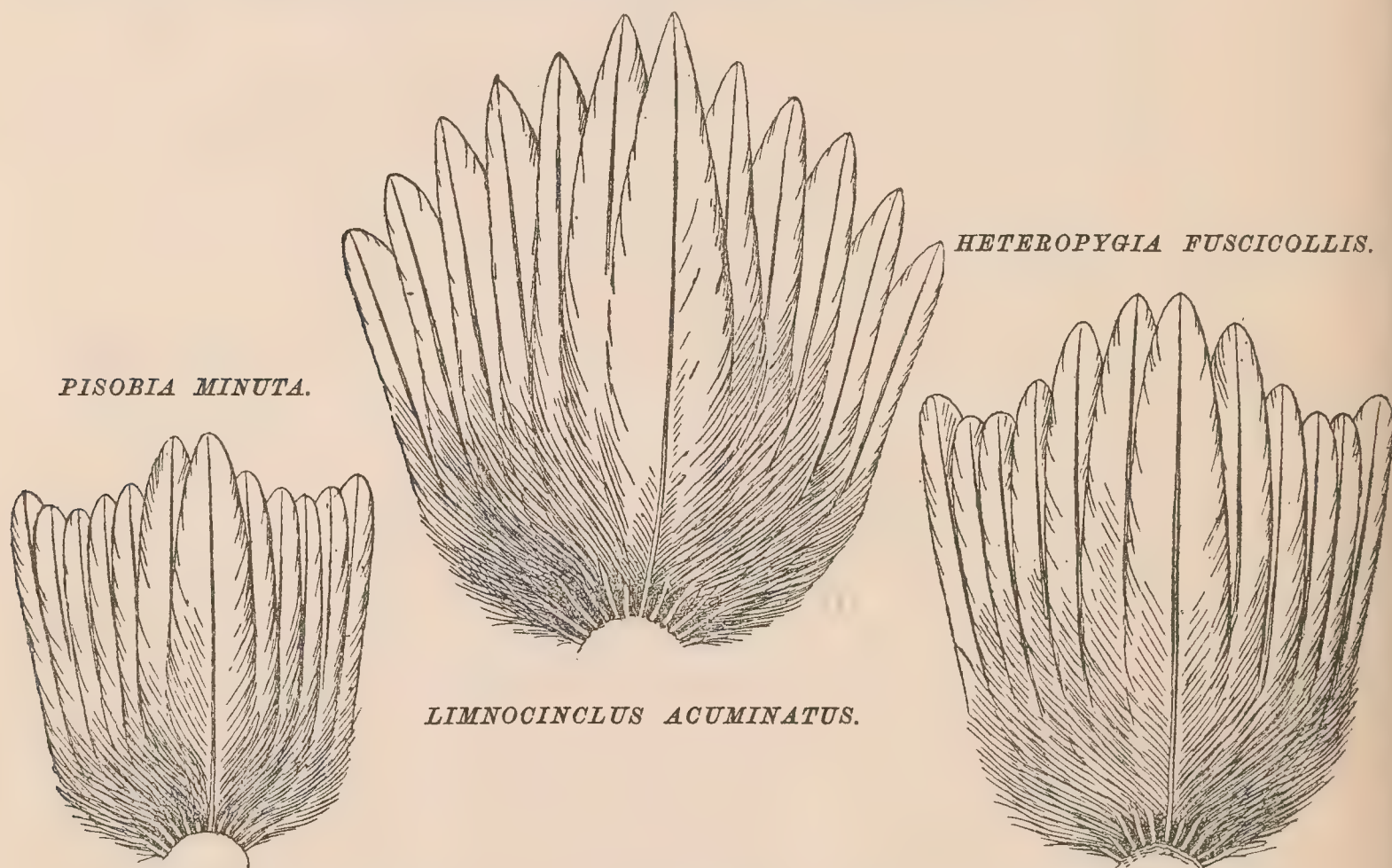
T. pectoralis.

T. acuminata.

"Central feathers of the tail .25 longer than next and .35 longer than outermost.

Central feathers of the tail .1 longer than next, and .35 longer than outermost.

"The Siberian Pectoral Sandpiper has the lateral tail feathers somewhat more pointed than its ally, and this appears to be an uncertain character. Intermediate forms also occur in which the relative length of the tail-feathers is half-way between the two extremes quoted above."



The Seebohm drawings do not accurately depict the facts: the tail of "*acuminatus*" is regularly wedge-shaped, while that of "*pectoralis*" is correctly described as "doubly emarginate." I here give drawings carefully made from "*minuta*" (the type of *Pisobia*) and *fuscicollis* (the type of *Heteropygia*) for comparison with that of "*acuminatus*" (the type of *Limnocinclus*). The tail of *pectoralis* (= *maculata*) agrees with that of *fuscicollis* in general structure: the outer tail-feathers are longer than the next two inner pairs and about equal to the fourth pair, counting from the outside, while the two central pairs are much longer, the innermost pair being slightly the longest.

SHARP-TAILED STINT.

Seeböhm's figure does not correctly show this arrangement, and by examination of the next figure it is easily seen that the artist has failed to grasp the essential features of the tails of these birds. Of this bird (*Tringa bairdi*) Seeböhm wrote: "May always be recognised by its tail, the central feathers of which are not longer than the outer, though the intermediate ones on each side are rather shorter." The outspread drawings given by Seeböhm do not show such features well, whereas the ones I now present fairly give the essentials. It should be noted that Coues (*Proc. Acad. Nat. Sci. Philad.* 1861, p. 198) wrote of "*maculata*" (= *pectoralis*): "Tail rather long, deeply doubly emarginate, the central feathers pointed and greatly projecting."

In this place Coues, following Cassin, replaced *pectoralis*, as the specific name, by *maculata*, and he appears to have been followed without question.

In the A.O.U. *Checklist*, 3rd ed., p. 114, 1910, the species is called *Pisobia maculata*, and the prime reference given as "*Tringa maculata* Vieillot, *Nouv. Dict. d'Hist. Nat.*, XXXIV., 1819, 465:" but there is a prior *Tringa maculata* of Linné's *Systema Naturæ*, 12th ed., 1766, p. 249. The next name seems to be the one formerly commonly in use and which agrees with the vernacular "Pectoral Sandpiper," *Tringa pectoralis* Say: "Long's Exped., 1823, I., 171."

I now decide that the species *pectoralis* and *acuminatus* are not sub-specifically related, but are generically distinct. In addition to the wedge-shaped tail of the latter I find the structural proportions different, the bill of the last named being shorter while the legs and feet are longer and stronger. I moreover give the plumages of the two species, which seem to have been misunderstood as in no phase do they very closely resemble each other, and if properly identified specimens are compared no signs of intergradation are seen. Superficially they appear similar, if the upper-sides only be glanced at, but the under-sides are always very different. Baird, Brewer, and Ridgway in the "Water Birds of North America," Vol. I. (*Mem. Mus. Comp. Zool. Harv.*, Vol. XII.) 1884, p. 225, correctly differentiated the two species, but omitted the detail of the wedge-shaped tail of *acuminatus*, concluding:—

"This species (*acuminata*) resembles very closely the common *A. maculata*, but differs constantly in several respects. As to proportions, the bill is decidedly shorter and more slender, and the tarsus slightly longer, while the wing is about the same length. The middle tail-feathers are narrower and more acuminate. The colors are nearly the same but the rectrices are darker, the breast almost or quite unspotted centrally and posteriorly, and the crown decidedly rufous."

THE BIRDS OF AUSTRALIA.

This comparison was however made with the juvenile-plumage of *acuminatus*, a further note thus describing a specimen from New South Wales which they could not definitely deal with: "The posterior and lateral parts of the breast have coarse, irregular markings of dark brown, many of these markings being V-shaped, others irregularly sagittate or even transverse; these markings are continued, but increased in size along the sides of the crissum, and even the abdomen has a few small markings; the crown is not conspicuously rusty, neither is this colour there bounded sharply by the light superciliary stripe." We now know this last to be the breeding-plumage of *Limnocinclus acuminatus*, and if series of the two species be now sorted into plumages, great differences will be observed between the two. The essential character by which they can unfailingly be separated is the shape of the tail.

The immature-plumage of *Limnocinclus acuminatus* has been compared with that of *pectoralis*, but when once these are known they can never be mistaken. The former may shortly be described thus: Above, head-feathers black with broad bright rufous tips, giving a striped appearance; neck-feathers brownish centres and greyish edges; back and rump black with rufous tips as also the upper tail-coverts where the tips are more prominent; central tail-feathers with bold bright rufous edges; upper-back feathers, perapterals, and tertials black to brownish-black with broad bright rufous edgings; upper wing-coverts with paler edgings, secondary-coverts with broad white edges; secondaries white tipped; throat white; upper-breast pale fawn to rufous with narrow streaks down the centres of the feathers, the lower-breast having the streaks missing in the centre but well developed at the sides; the flank-feathers irregularly rufous tipped; centre of abdomen dirty-white; under tail-coverts white with dark brownish central streaks. A whitish superciliary streak is present.

The adult summer-plumage is very different below, though the upper coloration is similar to that of the immature, chiefly differing in lacking some of the rufous tipping; the throat is white unspotted; the upper-breast is bright rufous, the feathers having a central black spot; the lower-breast is paler rufous tinged, while the spots develop into sagittate markings occurring somewhat more sparsely, which continue on to the abdomen still more sparsely and larger, and the under tail-covert have dark streaks in their centres.

That is, the juvenile and summer adult-plumages are very different when the under-surfaces are compared.

The immature of *pectoralis* when contrasted with that of *acuminatus* has the upper coloration somewhat similar: the former has less rufous to the feathers throughout, and the shade of rufous is paler; the under

SHARP-TAILED STINT.

coloration however is quite of a different character: the throat is pure white; the upper and lower-breast is greyish-brown with scarcely any rufous tinge and is boldly, heavily and regularly streaked with black; the abdomen, flanks, and under tail-coverts are immaculate white.

The adult summer-plumage of *pectoralis* differs very little from that of the immature—the immature rufous edgings being lost; otherwise no noticeable character can be given.

These facts show that these birds cannot be regarded as very closely related, and consequently a correction is necessary in the recent *Hand-List of British Birds* by Hartert, Jourdain, Ticehurst, and Witherby, 1912, where (p. 175) they are classed together as subspecies under the names "*Erolia*" *maculata maculata* and "*Erolia*" *maculata acuminata*, and the species-name used is "*Erolia*" *maculata*. They are certainly quite distinct species, and the specific names to be used are *acuminatus* and *pectoralis*, whatever genus or generic names may be used in connection with these.

GENUS—EROLIA.

EROLIA Vieillot, Analyse Nouv. Ornith., p. 55, 1816 Type *E. ferruginea*.

Also spelt—

Ærolia id., Galerie d'Ois., Vol. II., p. 89, 1825.

Ærolia id., ib., pl. 231.

Acrolia Temminck and Laugier, Planch. Col. d'Ois., Vol. V., pl. 510, note, 1830.

Falcinellus Cuvier, Règne Anim., Vol. I., p. 486, 1816 .. Type *E. ferruginea*.

Pelidna (not Cuvier, 1816) Billberg, Synops. Faunæ

Scand., Vol. II., pt. 1., p. 161, 1828 Type *E. ferruginea*.

Ancylocheilus Kaup, Skizz. Entwick-Gesch. Nat. Syst.,

p. 50, 1829 Type *E. ferruginea*.

Also spelt *Ancylochilus* Agassiz, Index Univers., p. 21, 1846.

SMALL Waders with long decurved bills, long wings, short tails, short legs, and short toes.

The long slender culmen is decurved, with the groove in the upper mandible extending almost to the tip, which is not expanded. The culmen is longer than the metatarsus, and almost exactly twice the length of the middle toe. The wings are long and pointed, the first primary longest. The tail is short, much less than half the length of the wing and not much longer than the culmen. The metatarsus is short, about three-fourths the length of the culmen; it is regularly scutellate, both in front and behind. The toes are all cleft to the base, the middle toe about two-thirds the length of the metatarsus; a long hind toe present.

The genus *Pelidna*, which has been admitted by most writers who have utilised restricted genera, is very close to this: the long decurved bill is somewhat more compressed and generally deeper at the base, with the tip a little more expanded and faintly punctulate, the legs and feet a little shorter. I mention this, as to me the distinctions seem very finely drawn when by the same writers such forms as *Vetola* and *Limosa*, *Iliornis* and *Totanus*, are lumped. There seems to me to be more difference between *P. damacensis* Horsfield and *P. minuta* Leisler than between *Pelidna* and *Erolia*. It is probable that the expanded punctulate tip of the former is responsible for their differentiation, and consistently with the methods here adopted I would unhesitatingly accept these as distinct. The lumping of the straight-billed forms with these curve-billed ones, which I admitted in my "Reference List," of course cannot be defended. As there has been much discussion as to the exact status of the generic name *Erolia*, I herewith give extracts from the original introduction.

EROLIA.

In the *Analyse nouv. Ornith.*, 1816, Vieillot defined the genus *Erolia* thus (p. 55) : “ *Erolie, Erolia*. Bec arrondi à la base, plus long que la tête, sillonné en dessus, fléchi en arc, un peu obtus. Esp. nouv. (O).”

This genus was placed in his 3^e Famille, *Ægialites* (p. 54), a member of his 4^e Ordre, Echassiers, *Grallatores*. The diagnosis of the Famille *Ægialites* reads : “ Bec médiocre, ou plus long que la tête, obtus ou pointu, quelquefois terminé en forme de coin—Doigts totalement séparés, les antérieurs ou seulement les extérieurs unis à la base par une membrane.”

On p. 69 is described the Esp. nouv. (O), indicated on p. 55 : “ (O) *Erolie variée, Erolia variegata*. Tachetée de gris et de blanc en dessus : blanche avec de petites lignes brunes sur le devant du cou et sur la poitrine ; bande blanche entre le bec et l’œil ; remiges et rectrices noirâtres ; bec et pieds noirs. Taille de l’Alouette de mer, mais plus haute sur les jambes : habite l’Afrique.”

EROLIA FERRUGINEA CHINENSIS.

EASTERN CURLEW-SANDPIPER.

(PLATE 162.)*

TRINGA (*Pelidna*) *CHINENSIS* Gray, Zool. Miscel., p. 2, 1831; China.*Tringa* (*Pelidna*) *chinensis* Gray, Zool. Miscel., p. 2, 1831.*Schœniclus chinensis id.*, List. Spec. Birds Brit. Mus., pt. III., p. 105, 1844.*Schœniclus subarquata* (not Guldenstaedt) Gould, Birds Austr., Vol. VI., pl. 32, 1848.*Tringa subarquata* (not Guldenstaedt) Middendorff, Sibirische Reise, p. 220, 1851; Schrenck, Vögel des Amur-Landes, p. 421, 1860; Radde, Reisen Suden von Ost-Sibir., p. 333, 1863; Ramsay, Proc. Linn. Soc. N.S.W., Vol. II., p. 198, 1878; Salvadori, Ornith. Papua, e Mol., Vol. III., p. 317, 1882; Ramsay, Tab. List Austr. Birds, p. 20, 1888; Legge, Proc. Austr. Assoc. Adv. Sci., Vol. IV., p. 954, 1892; Ogilvie-Grant, Ibis 1910, p. 179.*Pelidna subarquata* (not Guldenstaedt) Taczanowski, Mém l'Acad. Imp. Sci. St. Petersb., Ser. VII., Vol. XXXIX., p. 925, 1893.*Ancylochilus subarquatus* Gould, Handb. Birds Austr., Vol. II., p. 256, 1865; Sharpe, Cat. Birds Brit. Mus., Vol. XXIV., p. 586, 1896; Campbell, Nests and Eggs Austr. Birds, p. 820, 1901; Hall, Emu, Vol. II., p. 67, 1902; Hutton, Trans. New Zeal. Inst. 1903, Vol. XXXVI., p. 155, 1904; Hall, Key Birds Austr., p. 86, 1906; Mathews, Handl. Birds Austral., p. 28, 1908; Littler, Handb. Birds Tasm., p. 144, 1910.*Erolia ferruginea* (not Brunnich) Mathews, Nov. Zool., Vol. XVIII., p. 223, 1912.

DISTRIBUTION. Siberia (breeding), migrating southward to Australia and Tasmania (New Zealand) in winter.

Adult male, in summer-plumage. Head and hind-neck dark brown with rufous margins to the feathers, which is shown more intensely on the latter; the feathers of the mantle, upper-back, and scapulars tipped with white, and spotted with chestnut on the margins; lower-back blackish with pale edges to the feathers; upper tail-coverts white, barred with black; tail ash-grey with white shafts to the feathers; lesser wing-coverts dark brown like the bastard-wing and primary-coverts, some of the latter tipped with white; median coverts pale, as also the greater coverts which are tipped with white; primary-quills dark brown with white shafts and* The Plate is lettered *Erolia ferruginea*.



J. G. Keulemans, del.

Witherby & Co.

$\frac{4}{5}$

EROLIA FERRUGINEA.
(*CURLEY STINT*).

EASTERN CURLEW-SANDPIPER.

pale brown inner webs, some of the inner primaries edged with white on the outer webs; secondaries for the most part white with brown on the outer webs, the long innermost secondaries blackish, edged with rufous and fringed with white at the tips; sides of face, throat, and under-surface of body chestnut, more or less tinged with white, becoming paler on the vent and under tail-coverts, the latter having dark sagittate markings and cross-bars; axillaries and under wing-coverts white, the small marginal-coverts dotted with pale brown; bill and feet black; eyes brown. Total length 210 mm.; culmen 39, wing 127, tail 48, tarsus 30.

Adult female, in summer-plumage. Similar to the adult male.

Adult male, in winter-plumage. Differs from the summer-dress by the grey of the upper-surface and the almost uniform white on the under-parts.

An adult female collected in March is just beginning to put on the summer-dress, which may be seen by the rufous feathers on the fore-neck, breast, and the sides of the body.

Nest. A depression in the ground.

Eggs. Clutch, four; "Ground colour pale greenish-grey, marked with a few purplish-grey underlying spots, and rich deep rufous-brown surface spots and large blotches, the latter collected at the larger end. Axis 36.75 mm; diameter 25.65." (Dresser.)

Breeding-season. June, on the Taimyr River, Siberia (Middendorff).

MR. J. P. ROGERS found these birds rare in North-west Australia in March, 1911. Those obtained were found on the beach.

Captain S. A. White sent me some skins collected by himself in South Australia. He found them feeding with other small Waders.

Mr. J. W. Mellor says: "They roam over the flat muddy swamp in search of food. They were seen at Stansbury, Yorke Peninsula, South Australia, in small flocks, in April, 1911, on the open sea-shore of St. Vincent's Gulf. They were exceedingly fat."

Mr. Charles Belcher says this species arrives and leaves Victoria about the same time as the Sharp-tailed Stint, but is the much rarer bird. Not found far from the sea.

I am indebted to Mr. George Broome for the following note, accompanying the skin: "Fairly plentiful near Geelong, Victoria, now (July, 1911). They are in flocks of from six to nine, feeding among the salt bushes and wading in the shallow muddy water."

Middendorff writes: "It arrived on the River Taimyr (74° N. lat.) on June 4th and soon began nesting on the marshy parts of the Tundra. A female shot on June 15th had an egg almost ready for laying. It became more rare near the mountains. It arrived on the Boganida on May 27th, but did not appear to breed there."

Schrenck shot a solitary bird on August 15/27 at Ussuri. It was on the low muddy shore close to the water. When frightened it flew up the river, but came back to the same place again.

THE BIRDS OF AUSTRALIA.

Radde writes: "On July 31st, this sandpiper was in full summer plumage, as the specimens shot on the Dshindagatai Lake proved. I found them only in flocks."

Of the birds described, the one in winter-plumage, which is the one figured, was collected on May 29th, 1909, at Wilson's Inlet, South-west Australia, by Mr. F. L. Whitlock; the male in full breeding-plumage, on Melville Island on April 24th, 1912, by Mr. J. P. Rogers.

The few specimens available of this species in breeding-plumage, suggest that it has the same subspecific distinctions as the next bird treated.

GENUS—CANUTUS.

- CANUTUS Brehm, Vögel. Deutschl., p. 653, 1831 .. Type *C. canutus.*
Calidris Cuvier (not Illiger, 1811), Règne Anim., Vol. I.,
 p. 489, 1816 Type *C. canutus.*
Tringa Gray, List Genera Birds, p. 69, 1840 .. Type *C. canutus.*

STOUT medium Waders with short straight bills, long wings, short tail, short stout legs and feet. The culmen is short, stout and straight, the tip decidedly expanded but not punctulate; the groove in the upper mandible extends almost to the tip. The culmen is noticeably depressed, in the terminal half, to the tip; is longer than the metatarsus, and a little more than half the length of the tail. The wings are long and very pointed, the first primary longest. The tail is short and even, less than half the length of the wing. The metatarsus is stout and short, regularly scutellate in front and behind: it is slightly shorter than the culmen, but longer than the middle toe. The toes are short, strong, and widely margined, though cleft to the base: the middle toe is about two-thirds the length of the metatarsus. A strong hind toe and claw is present.

CANUTUS CANUTUS ROGERSI.

EASTERN KNOT

(PLATE 163.)*

CANUTUS CANUTUS ROGERSI, subsp. n.; Japan.

Tringa canutus (not Linné) Middendorff, Sibirische Resie, p. 219, 1851; Schrenck, Vögel des Amur-Landes, p. 420, 1860; Gould, Handb. Birds Austr., Vol. II., p. 259, 1865; Buller, Birds New Zeal., p. 194, 1873; *id.*, Trans. New Zeal Inst. 1874, Vol. VII., p. 206, 1875; *id.*, *ib.* 1876, Vol. IX., p. 333, 1877; *id.*, *ib.* 1877, Vol. X., p. 194, 1878; Seebohm, Geogr. Distr. Charadr., p. 422, 1887; Buller, Birds New Zeal., 2nd ed., Vol. II., p. 35, 1888; Ramsay, Tab. List Austr. Birds, pp. 20 and 31, 1888; Seebohm, Ibis 1888, p. 348; Legge, Proc. Austr. Assoc. Adv. Sci., Vol. IV., p. 952, 1892; Taczanowski, Mém. l'Acad. Imp. Sci. St. Petersb., Ser. VII., Vol. XXXIX., p. 895, 1893; Sharpe, Cat. Birds Brit. Mus., Vol. XXIV., p. 593, 1896; Campbell, Vict. Nat., Vol. XIII., p. 55, 1896; North, Birds County Cumberl., p. 112, 1898; Hutton, Trans. New Zeal. Inst. 1900, p. 255, 1901; Campbell, Nests and Eggs Austr. Birds, p. 820, 1901; Bryant, Emu, Vol. V., p. 26, 1905; Hall, Key Birds Austr., p. 86, 1906; Mathews, Handl. Birds Austral., p. 28, 1908; Ogilvie-Grant, Ibis 1910, p. 178.

Canutus canutus (not Linné) Mathews, Nov. Zool., Vol. XVIII., p. 223, 1912.

DISTRIBUTION. Siberia (breeding), migrating southward to Australia in winter (New Zealand).

Adult male, in summer-plumage. Sides of face, sides of crown, throat, and under-surface rufous, abdomen white, and the under tail-coverts have narrow black streaks; axillaries white with brown bars; under wing-coverts white with small dark frecklings; the top of the head black with rufous margins to the feathers; hind-neck grey with dark shaft-lines; back and scapulars black with chestnut or white edgings to the feathers of the former and twin spots on the latter; lesser upper wing-coverts, median, and the greater series pale brown, the latter tipped with white; bastard-wing dark brown, as also the primary-coverts, which have white tips; primary-quills dark brown, black at the tips and white shafts; secondaries paler brown with white tips and whitish inner webs, the long innermost feathers like the back; rump grey with whitish tips to the feathers; upper tail-coverts white, barred and longitudinally lined with black; tail-feathers grey; eyes brown; feet olive-brown; bill black. Total length 258 mm; culmen 31, wing 156, tail 64, tarsus 31.

*The Plate is lettered *Canutus canutus*.



J G Keulemans, del

Witherby & Co

34
CANUTUS CANUTUS.
(*KNOT*).

EASTERN KNOT.

Adult female, in summer-plumage. Very similar to the adult male.

Adult male, in winter-plumage. Ash-grey above, with narrow dark shaft-lines to the feathers; wings much the same as that of the summer-plumage; upper tail-coverts also similar but not so strongly pronounced; sides of face, throat, and entire under-surface white, with minute pale brown shaft-streaks on the sides of the face and frecklings of the same colour on the breast and sides of the body and, more sparsely, on the abdomen and under tail-coverts; axillaries longitudinally marked with brown and white.

Adult female, in winter-plumage. Similar to the adult male.

The immature bird differs from the winter-plumage only in having black sub-marginal lines fringed with white to the feathers of the back and wings.

Nest and eggs. Undescribed.

GOULD first added this bird to the Australian List in his *Handbook* of 1865, from birds sent to him by Strange, who had collected them at Moreton Bay, Queensland, on September 2nd, 1861. Since then it has been found in every State in the Commonwealth, except Tasmania.

Seebohm* says the first bird "was seen on the 6th of July, and on the 11th a small flock appeared [on Great Liakoff Island]. On the 14th several examples were shot, and on the 18th more; but on the 20th this species became rarer, and is not recorded after the 31st."

Middendorff only noted it on the Taimyr River by picking up a dead one on August 30th. On the Boganida two examples were shot on May 27th, and no more seen.

A flock was seen on July 7th on the sea-shore, close to the mouth of the Uda.

Schrenck shot a pair of young birds on the 17/29 August, on the low pebbly shore of the Amur River in the vicinity of Nikolajevschen posten.

The bird figured and described in winter-plumage was collected at Botany Bay, New South Wales, in December, 1893, and the one in full breeding-plumage is the type of *rogersi* from Shanghai, collected in April.

It seems strange that comparisons have not recently been made with the object of indicating subspecies of this bird, for upon separating the British Museum collection into localities, it was at once obvious that such were easily recognisable. When long series are available from its breeding-grounds, wonder will be expressed at the differences of the forms. In this case, though such have not yet been collected, many specimens in full plumage have been examined, with the result that the American Knot is noticeably paler, both above and below, than the European Knot, while the eastern Asiatic form is intermediate. The difference in coloration between the European and American forms is very marked, and the fact of its previous non-recognition

* *Ibis* 1888, p. 346.

THE BIRDS OF AUSTRALIA.

may be due to the absence of European specimens in the American museums. It is much more noticeable than in the case of the Turnstone before mentioned.

American birds have the feathers of the head with broader and paler rufous margins, thus giving the head, as compared with that of European specimens, a lighter, less uniform, and more streaked appearance; the feathers of the back of the neck are paler and more greyish in tone, while the feathers of the upper-back are brownish-black with broad, pale grey and rufous tips; in the European form the back-feathers are darker and have less but brighter rufous tips, which however wear away more quickly than the paler grey of the American birds, and leave the back with a comparatively blackish-black, which greatly contrasts with the pale back of the American bird. The scapulars of the American bird have the rufous spots much paler and smaller but the edges more prominent, while the rufous on the upper tail-coverts is much paler and less noticeable; the under-surface, as above stated, is noticeably paler. The immature-plumages of the two forms shows very little difference, but in the winter-plumage the American birds are appreciably lighter above than the European ones.

As regards comparison in size, I have measured many birds as to the length of the bill and wing, and I find that the female might prove very slightly larger on an average, but that the figures overlap very much. When American examples are compared with European birds, the same occurs: the American birds average very slightly larger than the European ones, but the figures again overlap too much for practical usage. The largest American birds are however appreciably larger than the largest European ones, and long series of breeding birds would, I think, confirm these conclusions.

Eastern Asiatic birds constitute a third race which is somewhat intermediate between the American and European; the under-surface coloration of the summer-plumage is paler in tone than that of the European and comes close to that of the American, but the upper coloration is darker than that of the American and approaches nearer that of the European. All the specimens I have examined are constant in having the abdomen white though otherwise in perfect plumage. Neither the European nor American races show this feature: in each the rusty under-surface coloration is present on the abdomen and even tinges the under tail-coverts; when it is being lost on the abdomen the feathers of the breast show darker markings, and the rufous is being rapidly lost from the upper-surface feathers. There can be little doubt that the East Asiatic bird is quite distinct, as the plumage-changes also differ: thus a bird from China with the under-surface still fully rusty has lost all the rusty from the upper-surface, the feathers

EASTERN KNOT.

being blackish with broad grey edges. In a similar state of plumage, American birds show more greyish colour above, but the under-surface shows many scattered feathers with sagittate dark markings among the rusty, while European ones show the same sagittate markings on the under-surface but the back is conspicuously darker, the grey edgings being less and the black centres more prominent.

I have named this Eastern Asiatic bird—

Canutus canutus rogersi,

while the American bird would seem to have for its name *Canutus canutus rufus* Wilson.

GENUS—A N T E L I O T R I N G A , nov.

Type *Totanus tenuirostris* Horsfield.

MEDIUM, stoutly-built Waders with long straight bills, long wings, short tails and short stout legs, and strong feet.

The bill is long, straight, and fairly stout: it is however proportionately more slender than that of *Canutus*, with which genus it has been confused; the nostrils are very long, and the tip is less expanded than in *Canutus*; the culmen is longer than the metatarsus.

The wings are long and narrow with the first primary longest. The tail is short and square, somewhat emarginate, about one-third the length of the wing. The metatarsus is stout and short, noticeably shorter than the culmen, and about half as long again as the toes. The middle and hind toe are short and strong.

Though this species has been classed as congeneric with *Canutus canutus*, I consider their relationship to be somewhat remote, as their summer-plumages differ so widely. The minute differences in the bill-characters seem to indicate a similar case of convergence, as is seen in *Pelidna* and *Erolia*. As confirmation I would cite the following: Harting, in the *Proc. Zool. Soc.* (Lond.) 1874, p. 242 *et seq.*, gave figures on pl. XL. of the bill, feet, and tail of this species under the name *Tringa crassirostris*, and wrote: "In *T. crassirostris* (plate XL., fig. 7) the bill is unusually deep at the base, and laterally much compressed; the wings long with broad and powerful flight-feathers; the tail (fig. 9) almost square; the tibia for some portion of its length bare; the tarsus (fig. 8) longer than the middle toe; the toes comparatively short, stout, and well-margined, as in *Tringa canutus*,* while the nails are long and curved. * Several naturalists who have met with *T. crassirostris* for the first time—as Messrs. Hume, Swinhoe, Blakiston, and others—have likened it, from its robust size, to the Knot, *T. canutus*; and Mr. Swinhoe has named it the Chinese Knot. There can be little doubt, however, from the character of its seasonal changes of plumage, as well as from certain similarities of structure, that its affinities are with the Dunlin, *T. alpina*."



J. G. Keulemans, del.

Witherby & Co

34
CANUTUS MAGNUS.
(*GREAT KNOT*).

ANTELIOTRINGA TENUIROSTRIS.

GREAT KNOT.

(PLATE 164.)*

TOTANUS TENUIROSTRIS Horsfield, Trans. Linn. Soc. (Lond.), Vol. XIII., p. 192, 1821; Java.

Totanus tenuirostris Horsfield, Trans. Linn. Soc. (Lond.), Vol. XIII., p. 192, 1821; Jerdon, Birds of India, Vol. III., p. 689, 1864.

Tringa tenuirostris Swinhoe, Proc. Zool. Soc. (Lond.) 1863, p. 315; Gould, Handb. Birds Austr., Vol. II., p. 260, 1865; Masters, Proc. Linn. Soc. N.S.W., Vol. I., p. 60, 1876; Ramsay, *ib.*, p. 189, 1877; Castelnau and Ramsay, *ib.*, p. 384; Ramsay, Proc. Zool. Soc. (Lond.) 1877, p. 338.

Schœniclus magnus Gould, Proc. Zool. Soc. (Lond.) 1848, p. 39 (Australia); *id.*, Birds Austr., Vol. VI., pl. 33, 1848; Temminck and Schlegel, Fauna Japonica, p. 107, 1849.

Tringa crassirostris id., *ib.*, pl. 64 (Japan); Middendorff, Sibirische Reise, p. 219, 1851; Schrenck, Vögels des Amur-Landes, p. 420, 1860; Swinhoe, Ibis 1873, p. 370; Walden, *ib.* 1874, p. 147; Harting, Proc. Zool. Soc. (Lond.) 1874, p. 243, and plate; Ramsay, Proc. Linn. Soc. N.S.W., Vol. III., p. 297, 1879; Salvadori, Ornith. Papua. e Mol., Vol. III., p. 312, 1882; Seebohm, Geogr. Distr. Charadr., p. 421, 1887; Ramsay, Tab. List Austr. Birds, p. 20, 1887; Legge, Proc. Austr. Assoc. Adv. Sci., Vol. IV., p. 951, 1892; Taczanowski, Mém. l'Acad. Imp. Sci. St. Petersb., Ser. VII., Vol. XXXIX., p. 894, 1893; Sharpe, Cat. Birds Brit. Mus., Vol. XXIV., p. 600, 1896; Campbell, Nests and Eggs Austr. Birds, p. 821, 1901; Hall, Key Birds Austr., p. 86, 1906; Ogilvie-Grant, Ibis 1910, p. 178; Buturlin, Emu, Vol. XI., p. 97, 1911; Hill, *ib.*, Vol. XII., p. 252, 1913.

Tringa magna Bonaparte, Comptes Rendus Sci., Vol. XLIII., p. 596, 1856.

Canutus magnus Mathews, Nov. Zool., Vol. XVIII., pp. 7 and 223, 1912.

DISTRIBUTION. Siberia (breeding), migrating southward to Australia in winter.

Adult male, in summer-plumage. Upper-surface black, white, and chestnut; head and hind-neck black, streaked with white or grey; back and scapulars black, fringed with white and twin spots of chestnut on the latter; wings dark grey or pale brown with lighter edges to most of the coverts, the major coverts more distinctly margined with white; bastard-wing and primary-coverts blackish, more or less tipped with

* The Plate is lettered *Canutus magnus*.

THE BIRDS OF AUSTRALIA.

white ; primary-quills also blackish on the outer webs and at the tips, pale brown on the inner webs and the shafts white ; secondaries ash-brown, fringed with white, the long innermost feathers dark brown with hoary edges ; lower-back pale brown with white fringes to the feathers ; upper tail-coverts white with dark lanceolate shaft-lines or irregular dark spots ; tail ash-grey, somewhat darker on the middle feathers ; sides of face, throat, and under-surface white with streaks of brown on the forehead and sides of face, and oval spots of dark brown on the fore-neck, breast, and sides of body—much more sparsely on the latter ; a few dark streaks on the under tail-coverts and some elongated brown marks on the flanks ; axillaries white, irregularly marked with pale brown longitudinally ; under wing-coverts white ; iris brown ; feet olive-brown ; bill black, base of lower mandible brown. Total length 292 mm ; culmen 40, wing 186, tail 70, tarsus 34.

Adult female, in summer-plumage. Differs only in having less rufous on the back.

Adult, in winter-plumage. Differs chiefly in being greyer above with no black or chestnut, and the streaks and spots on the breast and sides of body are paler in colour and smaller in size.

Nest and eggs. Undescribed.

MR. J. P. ROGERS found these birds plentiful on Melville Island, Northern Territory, in May, 1912.

Ramsay (*Proc. Zool. Soc. (Lond.)* 1877, p. 338) says he met with a small flock of this species on one occasion only, on the banks of the Herbert River in Queensland.

Hill (*Emu*, Vol. XII., p. 252, 1913) says that it was "fairly numerous in the Cowie river," at Bonoloola, Northern Territory, but does not appear to have procured any specimens.

Middendorff (*l.c.*) reports : "All the summer large flocks of this bird were seen on the south coast of the Sea of Ochotsk. Although there were both males and females they did not breed there. Males and females were indistinguishable."

Schrenck (*l.c.*) records it from the Amur, shot by Maack a little above the Mariinskischen posten, on 17/29th of August.

The male figured and described was collected on Melville Island, Northern Territory, on March 30th, 1912, by Mr. J. P. Rogers.

The species-name of this bird is undoubtedly *tenuirostris*, though recently it has been known as *crassirostris* and *magnus*.

In the *Trans. Linn. Soc. (Lond.)*, Vol. XIII., Horsfield gave a systematic account of the "Birds of Java," and therein described many new forms. The descriptions are quite inadequate to determine the species, and were it not for the fact that the types were preserved in the British Museum and have been accessible to workers for very many years, they could have been dismissed as indeterminable. In the present instance it was correctly used by authors who examined the type, such as Gould and G. R. Gray. Gould in 1848 described this bird as *Schoeniclus magnus* ; but in 1865, having had his attention

GREAT KNOT.

drawn to the type-specimen, he called it *Totanus tenuirostris*, sinking his own name as a synonym. Through some inexplicable reason it then became known under the name *crassirostris*, given to it by Temminck and Schlegel about the same time as Gould called it *Schoeniclus magnus*. When the former issued the text to their *Fauna Japonica*, they claimed priority for their plate, but though this has been accepted I have been unable to find any data to prove their statement. I, of course, at once reverted to Gould's name, but now find that Horsfield's name must be used, as it is twenty-seven years older than Gould's.

In the *Cat. Birds Brit. Mus.*, Vol. XXIV., Sharpe (p. 600, 1896) used for this species Temminck and Schlegel's name, *crassirostris*—noting as synonyms *tenuirostris* Auct., not Horsfield. *Totanus tenuirostris* Horsfield was placed by Sharpe in the synonymy of *Totanus stagnatilis*. I am quite unable to provide any explanation for such action on the part of Sharpe. The type of *Totanus tenuirostris* Horsfield is still extant in the British Museum but *not* included in the general collection: it is absolutely certain that Sharpe did not examine the type when he made this statement, as the two birds are so different that it is quite impossible for anyone to confuse them. The long legs of *T. stagnatilis* are just as characteristic as the short legs of the present bird; the long thin bill of the former has little resemblance to the bill of the latter. It should be noted that Horsfield pointed out that *T. tenuirostris* had a slender bill, and this is the case, as the type-specimen, *which I have carefully examined*, is an immature bird.

GENUS—LIMICOLA.

- LIMICOLA Koch, Syst. baier., Zool., p. 316, 1816 Type *L. falcinellus*.
Platyrhamphus Billberg Synops. Faunæ Scand., Tom.
 I., pars 2 (Aves), Tab. A, and p. 172, 1828 .. Type *L. falcinellus*.
Falcinellus Kaup, Skizz. Entwick-Gesch. Nat. Syst.,
 p. 37, 1829 Type *L. falcinellus*.

SMALLEST Waders with very long broad bills, long wings, medium tail, short legs and feet.

The culmen is very long, broad, from the middle flattened and with the tip decurved; the groove in the upper mandible becomes obsolete in the terminal half, due to this flattening; the culmen is much longer than the tarsus which is again longer than the middle toe.

The wings are long and narrow with the first primary longest. The tail is more than one-third the length of the wing. The metatarsus is short, regularly scutellate both in front and behind; it is not much more than two-thirds the length of the culmen, and nearly half as long again as the middle toe. The feet are small, the middle toe being much shorter than the metatarsus; short hind toe present.

As recorded in the *Austral Avian Record*, Vol. I., p. 31, 1912, *Limicola* Koch, 1816, is antedated by *Limicula* Vieillot, 1816, and may be rejected by some writers on that account. In the case of the specific name "*hiaticula*," it was shown by purists that it should be amended to "*hiaticola*:" probably similar reasoning might be adopted in this case.* *Platyrhamphus* was introduced by Billberg for this species alone and would then become available.

* Agassiz did amend *Limicula* Vieillot to *Limicola*.



H Grönvold, del

Witherby & Co

$\frac{9}{10}$
LIMICOLA SIBIRICA.
(EASTERN BROAD-BILLED SANDPIPER).

LIMICOLA FALCINELLUS SIBIRICA.

EASTERN BROAD-BILLED SANDPIPER.

(PLATE 165.)

LIMICOLA SIBIRICA Dresser, Proc. Zool. Soc. (Lond.) 1876, p. 674 ; Siberia.

Tringa platyrhynchus (not Temminck) Swinhoe, Ibis 1863, p. 412 ; *id.*, *ib.* 1870, p. 363 ; Seebohm, Geogr. Distr. Charadr., p. 433, 1887 ; La Touche, Ibis 1892, p. 499.

Tringa (Limicola) pygmæa (not Latham) Middendorff, Sibirische Reise, p. 223, 1851.

Limicola platyrhyncha Dybowski, Journ. für Ornith. 1873, p. 103 ; Sharpe, Cat. Birds Brit. Mus., Vol. XXIV., p. 612, 1896 (pars).

Limicola sibirica Dresser, Proc. Zool. Soc. (Lond.) 1876, p. 674 ; Taczanowski, Mém. l'Acad. Imp. Sci. St. Petersb., Ser. VII., Vol. XXXIX., p. 924, 1893.

Limicola falcinellus sibirica, Mathews, Austral Av. Rec., Vol. I., p. 31, 1912 ; *id.*, *ib.*, p. 84.

DISTRIBUTION. East Siberia (breeding), migrating southward to north-west Australia and Northern Territory in winter.

Adult male (winter). General colour above ash-grey with dark shaft-lines and white fringes to the feathers, some of the feathers on the upper-back black, margined on the sides with ferruginous, like some of the long scapulars ; bastard-wing and lesser marginal wing-coverts sooty-brown ; median coverts brown with darker shaft-lines and fringed with white, greater coverts similar but paler and inclining to ash-grey ; primary-coverts blackish ; primary-quills dark brown with white shafts, paler on the inner webs and inclining to white towards the base ; secondaries pale brown, margined with white and with more or less white at the base ; some of the long innermost secondaries sooty-black, with ferruginous margins and tipped with ash-grey ; middle of the lower-back, rump, and upper tail-coverts sooty-black, fringed with white, grey, or ferruginous ; tail-feathers ash-brown with white shaft-lines and white margins, crown of head, hind-neck, and sides of neck blackish-brown, with grey and sometimes white margins to the feathers ; sides of the forehead and an indistinct line over the eye white, the feathers above and behind the latter more or less streaked with dusky-brown ; loreal streak and ear-coverts dusky-brown, the feathers on the fore-neck inclining to grey with broader dark centres, which form a band ; remainder of the under-surface white, including the breast, abdomen, under tail-coverts, sides of rump, sides of body and axillaries ; thighs dusky-grey ; under wing-coverts white, finely mottled with brown round the margin, the primary-coverts and quill-lining greyish-brown. Total length 175 mm. culmen 31, wing 106, tail 37, tarsus 23.

THE BIRDS OF AUSTRALIA.

Adult male (summer). General colour of the upper-surface sooty-black with ferruginous-and-white margins to the feathers; bastard-wing and marginal wing-coverts dark brown, lesser and median-coverts grey with dark centres; greater coverts pale brown, margined with white; primary-coverts and primary-quills dark brown, the latter having white shafts and pale inner webs becoming white at the base; secondary-quills pale dusky-brown with white margins and white bases, the long innermost secondaries black, broadly margined with ferruginous; upper tail-coverts black, narrowly fringed with ferruginous; tail-feathers pale brown, margined with white, becoming much paler on the outer feathers; crown of head black with slight ferruginous margins to the feathers and divided by a whitish streak on each side of the crown; sides of forehead white, superciliary line also white, more or less intermixed with minute lines of pale brown like the cheeks and sides of neck; loreal spot blackish, sides of breast grey, narrowly centred with dark brown; under-surface white with a buffy tinge; axillaries and sides of rump pure white; under wing-coverts white, mottled with pale brown on the margin; primary-coverts and quill-lining pearl-grey.

Nest and eggs. Undescribed.

I FIRST added this bird to the Australian List, in the *Austral Avian Record*, 1912, from a skin collected by Mr. J. P. Rogers in North-west Australia, in October, 1903. Later on in the same journal I extended its Australian range to the Northern Territory, from skins collected by the same man on Melville Island in April, 1912.

Middendorff says: "During the first half of July there were large flocks of this bird, both males and females, on the south coast of the Sea of Ochotsk, but they did not breed there." Dybowski obtained it in east Siberia in August.

Of the birds figured and described, the male in full breeding-plumage was collected in Siberia on August 2nd, and the male in winter-plumage on Melville Island, Northern Territory, in April, 1912, by Mr. J. P. Rogers.

When I introduced this bird to the notice of Australian ornithologists, I gave the result of my researches into the nomenclature of the form, but as it is probable that many readers of this book will not care to refer back, I will again detail the facts.

It is quite probable that no previous writer had seriously attempted to identify the beautiful description given by Brunnich, as it is so clear and characteristic.

In *Der Danske Atlas*, Vol. I., 1763, Pontoppidan gave an account of the Natural History of Denmark with plates of figures. The plates are signed "ad naturam delin. P. Brunniche," and are very crude. On pl. xxvi. a Sandpiper-like bird with a curved bill is figured as "*Scolopax falcinellus*," and on p. 623 (not 402 as erroneously given in the *Austral Avian Record*, Vol. I., p. 84, 1912) the legend reads: "*Scolopax falcinellus* Ryle oder Domschnepfe mit einem flachen und am Ende niedergebeugten Schnabel." This description is diagnostic, and shows that the writer was more observant than the artist, as the latter quite failed to reproduce the bill-characters.

EASTERN BROAD-BILLED SANDPIPER.

If this description should however be considered insufficient, the following year Brunnich, in the *Ornith. Boreal*, p. 49, 1764, redescribed in detail the same bird. It is probable that Th. Brunnich really wrote the diagnostic description given in Pontoppidan's work. Brunnich's description reads :—

Scolopax falcinellus, rostro depresso, apicibus decurvatis, corpore fusco lituris luteis, rectricibus cinereis apice albis, intermediis nigris immaculatis.

Pontop. atl. dan. I. t. 26, fig. 4. Siaelandis Ryle. Domsneppes. Deser. Rostro infra nares depresso, planiusculo, apicibus decurvatis, caput, collum, dorsumque fusca lituris luteis, alae cinereae, remiges primores nigricantes, tectrices harum apicibus albis, secundariae cinereae, a latere exteriori versus apicem ad rachin usque incisae; posticae longiores margine ferrugineo; apicibus albis, intermediae nigrae immaculatae; tectrices caudae superiores ex albo nigroque variae. E. Siaelandia.

Ob rostrum, capite multo longius, eum inter scolopaces descripsi.

This description is quite complete, and no reason can be urged against its acceptance.

The Eastern form is again much lighter than the Western or European one when in summer-plumage, so that Dresser separated it, giving a very good description but granting it specific rank. He wrote: "[The Siberian bird] differs in the summer plumage in having the feathers on the crown and entire upper parts very broadly margined with bright rufous, so as to give this colour extreme prominence" . . . "The general colouration [of the European form] of the upper parts is black, the margins to the feathers being narrow and white or ochreous white, and the crown is very dark" . . . "in the winter plumage the eastern one appears to be a trifle paler than the European bird." Notwithstanding such a clear account, which I find to be quite accurate, the two forms were lumped without comment in the *Cat. Birds Brit. Mus.*, Vol. XXIV., p. 612, under the name *Limicola platyrhyncha*. But even this specific name was not the oldest available if Brunnich's was ignored, as Bechstein described the bird under the name *Numenius pusillus*.

GENUS—DITELMATIAS nov.

Type *Gallinago hardwickii* Gray.

GALLINAGINE birds as hereafter defined, with eighteen tail-feathers.

The bill is very long, narrow, not deep at the base, straight and not expanded at the tip, where it is wrinkled: the wrinkling is only seen at the terminal third, and the culmen shows scarcely any flattening at that point. The nostrils are short slits placed in a groove near the base of the culmen: this groove extends about two-thirds the length of the bill, but becomes indistinct after the middle. The lower mandible is similarly grooved and punctulate, and is shorter than the upper, which becomes thickened at the tip and overlaps it. The wing is long and pointed, the first primary longest, and is more than twice the length of the culmen. The legs and feet are strictly totanine: the metatarsus is short, regularly covered with scutes both in front and behind, and is about half the length of the culmen. The toes are long and not webbed between; the middle toe is slightly shorter than the metatarsus, but with the claw slightly exceeds it. The hind toe and claw are long and slender and regularly totanine in appearance.

The tail is composed of eighteen feathers, which show little attenuation throughout, though the outermost is thin and but little shorter than the central ones. The tail is more nearly even than in the typical gallinagine birds: the outermost tail-feather in *G. gallinago* Linné is much shorter than the middle ones.

SNIPES AND WOODCOCKS.

SNIPES and WOODCOCKS form a well-differentiated group of Wading birds, having very long bills with more or less sensitive tips, short legs, and pointed wings—showing a characteristic appearance. On account of this family resemblance the group has been ill-treated by the only two systematists who have in recent times dealt with this group as a whole.

Seebohm, in his well-known *Geographical Distribution of the Charadriidæ*, lumped the whole of the species together under the one generic name *Scolopax*, ignoring and belittling all structural characters, while he did not allow the differences apparent in the coloration as much value as he did in many other cases.

He, however, as usual pointed out clearly the distinguishing features of the species and groups: thus on pp. 464-465, he separated the species into two large sections, which he called "Aberrant Snipes" and "Typical Snipes," and then again (pp. 470-471) subdivided these groups into Typical Snipes, Aberrant Snipes, Woodcocks and Semi-Woodcocks: the two former constituting his "Typical Snipes" of p. 464, the two latter his "Aberrant Snipes" of p. 465.

This latter classification reads:—

Typical Snipes: *major*, *æquatorialis*, *frenata*, *nobilis*, *macrodactyla*, *wilsoni*,
gallinago, and *gallinula*.

Aberrant Snipes: *stenura*, *megala*, *solitaria*, *nemoricola*, and *australis*.

Woodcocks and semi-Woodcocks: *minor*, *saturata*, *rusticola*, *rochusseni*,
undulata, *gigantea*, *stricklandi*, *jamesoni*, *imperialis*, and
aucklandica.

It was reasonably anticipated that with such a basis, Sharpe, in the *Catalogue* of the Birds in the British Museum, Vol. XXIV., would have remedied the defects in this classification in a satisfactory manner, but apparently the intricacies of the group dismayed him.

His conclusions are given in the following quotation (p. 616): "The Snipes vary considerably in style of plumage and in the amount of feathering on the tibio-tarsal joint, the latter being a character frequently made use of

THE BIRDS OF AUSTRALIA.

in their classification, but one which varies so much in degree that I have not been able to avail myself of it. The markings of black on the head and neck of the Woodcocks seem to afford a character of generic importance to separate them from the Snipes, and thus I consider *Neoscolopax* of Salvadori a recognisable genus of Mountain Woodcocks."

He then admitted as genera *Limnocryptes* for *gallinula* Linné, *Scolopax* for *rusticola* Linné and *saturata* Hodgson, *Philohela* for *minor* Gmelin, and *Neoscolopax* for *rochusseni* Schlegel. All the remainder he lumped under the generic name *Gallinago*.

The most casual examination shows this to be a retrograde step, in view of the separation by Seebohm of the species into groups.

It is rather strange that Sharpe, who had commonly used the nature of the metatarsal covering for subdivision in this Order, did not take into consideration this feature in the present instance. It seems to afford a basis for the separation of the species into Woodcock-like birds and Snipe-like birds, and moreover these Woodcock-like birds all fall into Seebohm's group of Woodcocks and semi-Woodcocks, which in addition only includes two species which have the legs and feet of the Snipe-like birds combined with the bill of the Woodcock-like birds.

The results of my investigation seem worthy of record, especially in view of recent systematic work.

The first consideration was the collation of the generic names proposed in the group, and here at once the synonymy given in the British Museum *Catalogue* was found very much at fault.

Scolopax was introduced by Linné (*Syst. Nat.*, 10th ed., p. 145, 1758) for a varied assemblage of Wading birds, and Vieillot, in 1816, introduced *Rusticola* for Linné's *S. rusticola*. Some months afterwards Koch introduced *Gallinago* for the Snipes proper, and only the application of the principle of Linnean tautonymy avoids an unpleasant complication. By means of that principle the type of *Scolopax* is fixed as *S. rusticola*, and *Gallinago* is left as the first available name for the Snipe-like birds.

The first name to be investigated is *Telmatias* Boie, 1826. In the *Catalogue* of the Birds in the British Museum this generic name is given in the synonymy of *Gallinago* but the type is cited as *stenura*. Boie introduced the generic name thus (*Isis* 1826, p. 979):—

"*Telmatias*: *stenoptera* Kuhl: *gallinago* Lin. u.v.a."

It would thus appear to have been intended to cover all Snipes, but we have to treat the name on the written word and we thus get *Telmatias* Boie — type (by monotypy) *gallinago* Linn. — for *stenoptera* Kuhl is an

SNIPES AND WOODCOCKS.

unrecognisable MS.-name. It is given in the synonymy of *stenura* in the *Catalogue of Birds*, Vol. XXIV., p. 619, as “*fide* Boie, *Isis* 1826, p. 979,” probably following Seebohm, but I can find no reason whatever for such a statement. Boie’s only reference is as quoted above, and *stenura* was not described until four years later. However, Seebohm correctly cites *gallinago* as the type of *Telmatias*, so he cannot be blamed for Sharpe’s mistake.

Kaup, in the *Skizz. Entwick-Gesch. Nat. Syst.* 1829, p. 117, used *Telmatias* Boie for *gallinago* Linné alone, and introduced:—

- (p. 118) *Limnocryptes* for *S. gallinula*,
- (p. 119) *Pelorychus* „ *brehmii*, and
- (p. 121) *Enalius* „ *sabini*.

The latter two pass absolutely into the synonymy of *Gallinago*, the species cited, *brehmii* and *sabini* having been proved to be simply aberrations of *gallinago*.

Though using Kaup’s genus-name *Limnocryptes* (rect. *Limnocryptes*), and quoting *Pelorychus* (as *Pelorynychus*) in the synonymy of *Gallinago*, Sharpe omitted *Enalius* though noting *Enalius sabinii* in the specific synonymy.

Brehm’s *Philolimnos* (*Vögel. Deutschl.*, p. 622, 1831) is an absolute synonym of *Limnocryptes* Kaup. Hodgson, in the *Journ. As. Soc. Bengal*, Vol. VI., p. 491, 1837, suggested *Nemoricola* as a genus-name for his own *Scolopax nemoricola*; and Gray, in the *List Genera Birds*, Appendix, 1842, p. 14, fixed the name to this species.

In the *List Genera Birds* 1840, p. 70, Gray introduced *Homoptilura* for *undulata* Boddaert, but in the second edition, 1841, he replaced his own name by *Xylocota* “Bp. 1839,” noting, in addition to *undulata* Boddaert as the typical species, *sabini* Vigors.

As author of the combination *Xylocota sabini*, “Bp.” is given—whereas he cites himself as first using the combination *Xylocota undulata*. This is rather important in view of the complications around the name *Xylocota*.

In the *Catalogue of the Birds in the British Museum*, Vol. XXIV., the earliest reference to *Xylocota* is given as “Bp., C.R. Vol. XLI., 1855, p. 660,” and the type species is quoted as *jamesoni*. But in the place, the new species *Xylocota jamesoni* is only described, with no intimation that the generic name was new or had not been previously utilised.

Richmond (*Proc. U.S. Nat. Mus.*, Vol. XXXV., 1908, p. 648) has given the Gray-1841 reference as the earliest note of *Xylocota* he has traced.

I have however noted that it is included in a list of genera of birds given by Gray in the *Synopsis Contents British Museum*, 42nd ed., p. 104, 1840, where it appears only as a *nomen nudum*.

THE BIRDS OF AUSTRALIA.

In the *Cat. Gen. Subgen. Birds*, 1855, Gray revived his own *Homoptilura* for *undulata* Boddaert, and relegated *Xylocota* "Bp. 1839" to the synonymy of *Enalius* Kaup typified by *sabini*. This would be in accordance with the quotations of the combination given in the second edition of the *List Genera Birds*, 1841.

Bonaparte, in the *Comptes Rendus Sci.* (Paris), Vol. XLIII., p. 579, 1856, however, used *Xylocota* for the large South American Snipes, including *gigantea* Natt., *paludosa* Gm. (= *undulata* Bodd.), *stricklandi* Gr., and *jamesoni* Jard. Gray, in the *Handl. Gen. Spec. Birds*, Vol. III., p. 54, 1871, then accepted *Xylocota* "Bp. 1839" for *stricklandi* Gr., *jamesoni* Bp., and *imperialis* Sclater, referring *gigantea* Temm. and *undulata* Bodd. to *Gallinago* (s. str.). Of course this last usage was impossible, as none of the three species named as members of the group "*Xylocota* Bp. 1839" were known to science in the year 1839.

This extraordinary shuffling of the genus-name "*Xylocota* Bp. 1839," indicates that this was only a MS.-name, and that the earliest legitimate introduction of that name is the one made by Gray in the second edition of the *List Genera Birds*, 1841. This conclusion makes *Xylocota* Gray 1841, with *undulata* Boddaert as type, an absolute synonym of *Homoptilura* Gray 1840.

Keyserling und Blasius (*Wirbelth Europa's*, pp. lxxvii., 121, 216, 1840) proposed *Ascalopax* for the Snipes, apparently as a substitute for *Gallinago*, and Gray quoted it in the synonymy of that name in 1855 and 1871; but Seebohm gave as type *gallinula*, and Sharpe therefore placed this generic name as a synonym of *Limnocryptes*. Gray introduced *Cænocorypha* in the *Cat. Gen. Subgen. Birds* 1855, p. 119, for his own *Gallinago aucklandica*, and in the *Comptes Rendus Sci.* (Paris), Vol. XLIII., p. 579, 1856, Bonaparte proposed *Spilura* for *solitaria* Hodgson, *horsfieldii* Gray (= *stenura* Bp.), etc. Seebohm named *solitaria* as type, and this was accepted in the *Catalogue* of the Birds in the British Museum, but Bonaparte's own type-designation must have been overlooked. In the same place and year (p. 1023) Bonaparte wrote: "La *Spilura horsfieldii*, si commune à Java et à Sumatra, vit aussi fréquemment dans les environs de Singapore. Si le genre dont elle est le type avait besoin de confirmation, peut-être la trouverait-on dans quelques parties du squelette. Le sternum, du moins, à les échancrures latérales beaucoup plus ouvertes, et l'extrémité inférieure tronquée au lieu de finir en pointe."

A paper upon the "drumming" of Snipes was written by Meves in the *Proc. Zool. Soc.* (Lond.) 1858, and on p. 201 Meves proposed to class all the Snipes together which had the tail constructed for "drumming," as he interpreted

SNIPES AND WOODCOCKS.

it, and to use for these the new generic name *Odura*. This name does not appear in the synonymy of *Gallinago* in the British Museum *Catalogue*, Vol. XXIV., and I have not noticed that any writer has fixed a type-species to this name. I therefore designate as type of *Odura* Meves—*gallinago* Linné, the typical species of Meves's researches.

In the *Handl. Gen. Spec. Birds*, pt. III., p. 53, 1871, Gray notes:—

“*Polyptila*, 1855 (*olim*) Bp.” as a synonym of *Spilura* Bp. 1856, and “*Holmesia* Bp. (MS.) 1855” as a synonym of *Cænocorypha* Gr. 1854. I have not traced these names further back than this entrance.

The Woodcocks have few names to be considered: *Scolopax* Linné with *rusticola* as type, *Rusticola* Vieillot 1816 being the only synonym; *Philohela* Gray 1841, with *minor* Gmelin as type and sole species—*Microptera* Nuttall 1834 being preoccupied; and *Neoscolopax* Salvadori 1882 for *rochusseni* Schl. I have therefore as available names:—

Gallinago Koch 1816 .. Type *S. gallinago* Linné.

Synonyms:

Telmatias Boie 1826, *Pelorychus* Kaup 1829, *Enalius* Kaup 1829, and *Odura* Meves 1858.

Lymnocyrtus Kaup 1829 .. Type *S. gallinula* Linné.

Synonyms:

Philolimnos Brehm 1831, and *Ascalopax* Keyserling und Blasius 1840.

Nemoricola Hodgson 1837 .. Type *S. nemoricola* Hodgson.

Homoptilura Gray 1840 .. Type *S. undulata* Boddaert.

Synonym:

Xylocota Gray 1841 .. Type *S. undulata* Boddaert.

Cænocorypha Gray 1855 .. Type *G. aucklandica* Gray.

Synonym:

Holmesia Gray 1871.

Spilura Bonaparte 1856 .. Type *S. stenura* Bonaparte.

Synonym:

Polyptila Gray 1871.

Scolopax Linné 1758 Type *S. rusticola* Linné.

Synonym:

Rusticola Vieillot 1816.

Philohela Gray 1841 Type *S. minor* Gmelin.

Synonym:

Microptera Nuttall 1834 (preoccupied).

Neoscolopax Salvadori 1882 .. Type *S. rochusseni* Schlegel.

THE BIRDS OF AUSTRALIA.

The most casual examination shows that either Seebohm's advocacy of the whole of the species being placed in one genus *Scolopax* is correct—which course would not be adopted by anyone, or else more subdivision must be effected.

As I have hinted above, a careful examination of the bills and feet elicit characters of good value for separating the generic groups, and also give valuable suggestions as to the affinity of the species.

Thus *Scolopax rusticola* Linné has a distinctive appearance irrespective of coloration: the eye is placed far back in the head, but the bill is somewhat conical though very long and wrinkled towards the tip, which seems hard and not much expanded; the legs are very short, and the tibia is fully feathered; the wing is pointed, and the body plump; the metatarsus may be seen to be scutellated in front, but otherwise fairly regularly reticulate; the hind toe is not short but the hind claw is very short, while the toe is strongly built, as is also the metatarsus; the tail is composed of twelve feathers. Compared with this *Scolopax gallinago* Linné is very different: the eye is not placed so far back while the bill is very long and slender, not very high at the base, and from about the middle it is somewhat flattened, expanded and much wrinkled, but not hard; the legs are short though comparatively longer, and the tibia is unfeathered for a short space; the wing is more pointed than in the preceding, and the body is slender; the metatarsus is scutellated regularly in front and behind, having a typical Totanine appearance, and the hind toe is long and slender with a long hind claw, exactly comparable with that of a totanine wader. The tail is composed of fourteen feathers.

These two extremes are well differentiated, and have scarcely ever been united in one genus by recent writers.

When however the species grouped in the *Catalogue* of the Birds in the British Museum, Vol. XXIV., under *Gallinago*, are criticised, the first noticeable fact is that the South American birds—"G." *jamesoni* Bonaparte "G." *stricklandi* Gray, and "G." *imperialis* Sclater—and "G." *aucklandica* Gray and its allies are all essentially in agreement with *S. rusticola* Linné, and absolutely disagree with *S. gallinago* Linné. The South American birds, "G." *gigantea* Temm. and "G." *undulata* Boddaert, unite a combination of these characters, having a typical Woodcock bill but typical Snipe legs and feet.

It will be at once noticed that the preceding—united with the species Sharpe admitted as Woodcocks in the genera *Scolopax*, *Philohela*, and *Neoscolopax*—exactly make up Seebohm's group of Woodcocks and semi-Woodcocks. The other species which attract notice at once are *G. nemoricola*

SNIPES AND WOODCOCKS.

Hodgson and *G. solitaria* Hodgson, which also show peculiar structural features. The former has a very deep bill, resembling that of a Woodcock but really that of a Snipe, while other characters are all typically Snipe-like; the latter has a typical Snipe-like bill, but legs like those of a Woodcock and a peculiar tail. All the remaining species have a general resemblance to *G. gallinago*, but all show more or less modification in their tails.

The group—as a whole so well marked off from all the other Wading birds, that Seebohm classed them all under *Scolopax* with the diagnosis: “Charadriine birds with the bill twice as long as the tarsus and the toes cleft to the base”—would repay the earnest student for prolonged study. The question as to the relative value of coloration versus structural characters would receive an impetus from the result of this study, obtained by an unbiassed student. Seebohm’s conclusions all show the prejudice against all structural features, while more recent ornithologists have shown just as much prejudice against the use of coloration.

In the group left, after eliminating the species above named, little differences are seen in the coloration and general structure until the tail is examined, and then we obtain very extraordinary results. The tail-feathers of *S. gallinago* Linné are fourteen in number, those of *G. stenura* Bonaparte are twenty-six, but because the coloration and size and other structural features show little differences, these two birds are considered congeneric by authors who generically separate *S. gallinula* Linné, where the external structural differences are less marked; the tail being composed of twelve feathers. Study of the skeleton and other internal features of this latter species have elicited differences which appear deep seated. The logical conclusion would be the recognition of all species as generically distinct which show marked external differences. The argument is simple. We have here to deal with a group of ancient lineage, whose coloration is shown to be so fixed that it is little liable to variation, and that in many instances structural alterations can be brought about without change in colour. Two courses only are open: the absolute rejection of structural characters and the usage of colour solely, or the acceptance of structural features co-ordinate with colour-variation. The latter course necessitates the acceptance of many genera—but so does the former, if faithfully carried out. The peculiar idiosyncrasies of the writers who have hitherto dealt with this group have left their mark upon the present classification, as by no method of logical reasoning can either Seebohm’s or Sharpe’s classification be implicitly accepted.

I am here attempting to delimit the groups, taking into consideration the structural characters, and also giving full value to the coloration

THE BIRDS OF AUSTRALIA.

observed. If series of juveniles were available as well as spirit specimens, much could be done: but lacking these, the features gained from an examination of skins can be fairly utilised. The peculiar degeneration of the tail is the one puzzling character which requires careful consideration as to its systematic value, and it is quite probable that the species which show peculiar tails have also internal characters worthy of note, as has been proved in the case of *S. gallinula* Linné. To deal with the Woodcock-like birds first: I have given generally the characters of *Scolopax rusticola* Linné, the type of *Scolopax* Linné. The species *S. minor* Gmelin, which Sharpe admitted as generically distinct under Gray's name of *Philohela*, needs little consideration. The bill and legs are typically "rusticoline," a name here proposed to cover the characters exemplified by *S. rusticola*, and used as "scolopacine" has been so commonly utilised in a different sense. The body and general aspect is typically rusticoline, and the species is generically separable at sight by its peculiar attenuated first two primaries: the small size and Woodcock-coloration are quite distinctive. The species *S. rochusseni* Schlegel, for which Salvadori provided *Neoscolopax*—which genus Sharpe accepted—is typically rusticoline, save that the tibia is unfeathered for a short space; its coloration is remarkable.

The species *S. saturata* Hodgson—with which *S. rosenbergi* Schlegel, quite wrongly, has been synonymised—is quite as distinctive as regards coloration, and though the structural characters are typically rusticoline, the proportions differ: thus while the bill is slightly longer, though of the same depth, the wing is considerably shorter, and the metatarsus is of the same length. Again, while the wing of *S. rusticola* is more than twice the length of the culmen, it is much less than twice the length of the culmen in *S. saturata*; and further, while the wing is more than four times the length of the metatarsus in the former, it is less in the latter. To fix these differences, which coincide with a change in coloration, I propose the new genus-name *PARASCOLOPAX*, with *S. saturata* Hodgson as type.

As before noted, the South American "Snipes" classed by Gray (*Handl. Gen. Spec. Birds*, pt. III., 1871, p. 54) under *Xylocota*, are essentially rusticoline and not "gallinagine," a name here proposed to indicate the structural characters exemplified in *Scolopax gallinago* Linné.

These birds however show structural differences from each other and in one case, a distinct and extraordinary style of coloration. The coloration of the whole recalls that of a gallinagine bird rather than a rusticoline species, and it would seem to be this character alone which has continually caused their reference to the former. This peculiarity also

SNIPES AND WOODCOCKS.

prohibits their inclusion in *Scolopax*, so that there is no course open save the proposal of new generic names, as I have shown *Xylocota* to be untenable.

For *G. stricklandi* Gray I therefore propose the new genus *CHUBBIA*. The species cannot be compared with *Gallinago*, as the bill, legs, and feet are typically rusticoline; comparisons have therefore to be made with *Scolopax*, from which it differs at sight in coloration, the bill is much longer, the wing is shorter, the metatarsus is of the same length though much stouter, the tail is composed of fourteen feathers. In structural proportions it agrees better with *Parascolopax*—though nothing like that genus in coloration—having the wing less than twice the length of the culmen but *more* than four times the metatarsus.

Xylocota jamesoni Bonaparte can be classed under *Chubbia*. It agrees fairly with that genus, and differs little in coloration. The bill is more than half the length of the wing, which is less than four times the metatarsus. This agrees in structural proportions with *Parascolopax*, but the tail is composed of fourteen feathers and the coloration is quite different.

The third species included by Gray in *Xylocota*, was the *Gallinago imperialis* of Sclater, which at once recalls *Parascolopax* by its coloration. Upon examination, the black and red markings are seen to be entirely different in character. Its bill, legs, and feet are typically rusticoline, and in its structural proportions it comes also close to *Parascolopax*, the culmen being more than half the length of the wing, which however is more than four times the length of the metatarsus. This would therefore agree better with *Chubbia*, but the coloration is too different to allow the admission of this species into that genus. I consider that this species fully merits generic recognition, and therefore propose *HOMOSCOLOPAX* for *G. imperialis* Sclater alone.

The group of small birds of which *Gallinago aucklandica* Gray was first described, and for which he later introduced *Cænocorypha*, were classed by Sharpe under *Gallinago*, apparently in deference to the view that their coloration was more of the gallinagine than rusticoline type. Otherwise their structure is typically rusticoline, and Iredale and I, in our "Reference List of the Birds of New Zealand" (*Ibis* 1913, pp. 261-262), revived Gray's generic name *Cænocorypha* for this group. They have very little affinity indeed with *Gallinago*.

I have shown that *Homoptilura* Gray is the correct genus-name for *S. undulata* Boddaert. This species combines all the gallinagine features with a rusticoline bill and immense size. It could be shortly described

THE BIRDS OF AUSTRALIA.

as a gigantic Snipe with a Woodcock's bill. It is surpassed in size by the Brazilian bird named *Gallinago gigantea* Temminck, and from an examination of the birds of the two species preserved in the British Museum, it would seem that the typical Cayenne bird, *undulata* of Boddaert, has become larger the farther it travelled south. Thus while Cayenne birds measure—culmen 101-106, wing 155-160, metatarsus 47-48, Brazilian birds show culmen 117, wing 170, metatarsus 55. Argentine birds give culmen 124-133, wing 175-177, metatarsus 55-56. The genus is peculiarly well-marked by its huge size, strictly gallinagine legs and feet with exposed tibia, typically rusticoline bill, and absolutely gallinagine coloration. It can be compared with nothing, as the rusticoline bill is distinctive among the typically gallinagine coloured birds. Its co-existence alongside such a small typical gallinagine bird as *G. brasiliensis* Swain. (= *G. frenata* Auct.) is of much interest, as it points to the great antiquity of the coloration and consequent high value of a colour-alteration. The meaning of this strange medley of Snipe-Woodcock birds in South America will take a great deal of unravelling, especially as we have no stationary form at all in Australia, the two species here treated being simply migrants from Siberia. According to the British Museum Collection, *Homoptilura gigantea* Temm. lays a typical Woodcock's egg.

I have now criticised the species included by Seebohm in his Woodcocks and semi-Woodcocks, and come to the species he termed Aberrant Snipes. Two of these show distinctive coloration and can be treated first. *G. nemoricola* Hodgson is typically gallinagine in everything save its bill which, though gallinagine in character, is deep at the base like a rusticoline bill. The metatarsus is comparatively long while the wing is normally short. Hodgson's genus-name *Nemoricola*, of course, given to this species alone, is available and should be used.

The other distinctly coloured species is Hodgson's *S. solitaria*, and the combination of characters shown by it makes it stand well apart from all the other Aberrant Snipes. The metatarsus is regularly rusticoline as is also the hind toe and claw, while the bill is more gallinagine in character. The wing and bill are proportionally very long, while the metatarsus is typically rusticoline in its shortness. The tail is composed of eighteen feathers of which the outer ones are short and attenuated, the middle ten being broad and forming a regular rounded tail, while four on each side are much shorter and narrower. The bill is less than half the wing but more than twice the metatarsus. Though Seebohm and Sharpe have given this species as the type of *Spilura* Bonaparte, I have shown that this was an incorrect citation and that *stenura* was noted

SNIPES AND WOODCOCKS.

as type of that genus by Bonaparte himself. I therefore propose the new genus-name *NEOSPILURA* with *solitaria* Hodgson as type.

All the remaining species classed by Seebohm as Aberrant Snipes, and all the Typical Snipes of the same author, are characterised by a similarity of coloration that is almost puzzling, especially as no great discrepancies in size occur. The only species that Sharpe removed from *Gallinago* is the *S. gallinula* of Linné, which was admitted as a monotypic representative of the genus *Limnocryptes*. When Seebohm lumped the whole under *Scolopax*, he wrote (*l.c.*, p. 462): “[Authors] have placed the American Woodcock (*Philohela minor* (Gmelin) and the Jack Snipe (*Limnocryptes gallinula* (Linné)) in distinct genera, because in the former some of the primaries are remarkably attenuated and in the latter the bill and the sternum are slightly exceptional, regardless of the facts that the American Woodcock is apparently more nearly related to the European Woodcock than either of them are to the Moluccan Woodcock, and that the Jack Snipe and the Common Snipe are obviously nearer related to each other than either of them are to the Imperial Snipe of Colombia . . . It can scarcely be denied that in the Snipes, at all events, differences in the pattern of colour are of older genetic date, and therefore of higher generic value than so called structural differences.”

The peculiarities of Seebohm's arguments become noticeable when it is shown that the “Imperial Snipe of Colombia” is a “Woodcock.”

However, though *gallinula* Linné is typically gallinagine in coloration, it is more richly coloured, is much smaller than other “Snipes,” has a short somewhat rusticoline bill though the legs and feet are gallinagine; the tail is more distinctly wedge-shaped, and is composed of twelve feathers. There can be no objection to the recognition of the genus *Limnocryptes* by genus-splitters, but I should have anticipated absolute rejection by writers proposing genus-lumping. It has been shown, however, that the sternum is aberrant and other features of internal anatomy are said to differ from those of *G. gallinago*. The only logical conclusion is that where distinct structural differences are superficially apparent in members of this group, internal differences may be coincident even as Bonaparte has stated in the case of *stenura*. Eliminating *gallinula* we have now about a dozen species of “Snipe” varying little in size and coloration but some of which show somewhat important structural alterations.

Three species, on this account, were included by Seebohm in his Aberrant Snipes, viz. *stenura* Bonaparte, *megala* Swinhoe, and *hardwickii* Gray (= *australis* Latham preoccupied).

The tail-feathers in *G. gallinago* are fourteen in number, but sometimes sixteen occur; in all the other Typical Snipes of Seebohm with the exception

THE BIRDS OF AUSTRALIA.

of *gallinula* above noted, the tail-feathers are sixteen in number. In addition the wing is between 130 and 140 mm. in all save one, and the metatarsus between 33 and 36 mm. in all save three. Such constancy indicates the recognition of the species which show differences as being well defined, and this course I propose to adopt.

In *G. gallinago* the wing is between 130 and 140 mm., the bill is more than half the length of the wing, and is more than twice that of the metatarsus; the metatarsus is longer than the middle toe but shorter than the middle toe and claw; the tail is regularly rounded, composed of fourteen, sometimes sixteen feathers; the structural characters are gallinagine as above defined. Agreeing with the above are *æquatorialis* Rüppell, *delicata* Ord, *paraguayæ* Vieillot, and *media* Latham (= *major* Gmelin).

Two South American species are somewhat aberrant and might be given subgeneric rank: firstly, *nobilis* Sclater, which has a wing-length of about 140 mm., with a bill about 100 mm., and a metatarsus about 40 mm. This species has thus increased its bill-length one-third—as the limit in *G. gallinago* is about 75 mm.—and its metatarsus a little, the limit in *G. gallinago* being about 36 mm.—without any corresponding increase in its wing-length. The new subgeneric name *MACRODURA* will serve to indicate this difference. The other, *brasiliensis* Swainson, has the wing under 120 mm., but little corresponding decrease in bill and metatarsus. The bill is generally less than twice the length of the metatarsus—rarely more, though more than half the wing. I propose that this species be subgenerically distinguished by the new name of *ODURELLA*.

The Madagascar Snipe, *G. macrodactyla* Bonaparte, is a puzzling form to classify. It bears such a close likeness to the South American *nobilis* that Seebohm regarded them as only subspecifically distinct. Their distribution forbids this conclusion, and there can be no reasonable doubt that we have here a case of convergence. The isolation of the species on the island of Madagascar has again produced an extraordinary increase in bill-length, an appreciable increase in the metatarsus, with little increase in wing-length. The bill is generally well over 100 mm., in one instance measuring 113 mm., while the wing varies between 135 and 140 mm., and the metatarsus measures 41-42 mm. It can be easily distinguished from *nobilis* by its having the metatarsus regularly scutellate before and behind, whereas in *nobilis* the hind part of the metatarsus shows indistinctly reticulate, through the breaking-up of the scutes. For this I propose the new generic name *EUGALLINAGO*. This disposes of the Typical Snipes of Seebohm with fourteen-sixteen tail-feathers.

SNIPES AND WOODCOCKS.

Three species of Aberrant Snipes are left to be dealt with, and two of these occur in Australia. The one with twenty-six tail-feathers, *stenura* Bonaparte, which does not occur, is typically gallinagine in coloration and size, having a wing-length between 130-140 mm.

The second, with twenty tail-feathers, *megala* Swinhoe, occurs in Australia and agrees with the preceding. These both disagree with the typical gallinagine birds in the formation of their tails, and have been classed together under the name of Pintailed Snipes; they both agree in having the culmen less than half the wing and less than twice the metatarsus. For the former Bonaparte's genus-name *Spilura* is available, but on account of the great difference in the tail the latter must be considered generically distinct, and for *megala* Swinhoe I propose the new genus-name *SUBSPILURA*.

The species *G. hardwickii* Gray is abnormal in its wing-length, its long bill and metatarsus, and its tail of eighteen feathers. A detailed diagnosis has already been given, but it may be pointed out that it is the only typically Gallinagine bird with a wing-length of 150-160 mm.; the culmen is less than half the wing and about equal to twice the metatarsus. These differences fully merit the generic distinction granted the species.

PAGOA GEOFFROYI.

I AM indebted to Mr. Stuart Baker for the opportunity of describing the eggs of *Pagoa geoffroyi*, hitherto undescribed (see *ante*, p. 99):—

Nest. A depression in the sand and fine shingle, on the borders of a lake.

Eggs. Clutch, four? In shape the egg is oval, very slightly pointed at one end. Ground-colour pale stone, heavily marked at the larger end, and sparingly on the smaller, with dark purplish-black and lavender spots; and about the middle of the shell there are some spots of pale greenish-yellow; axis 40 mm., diameter 29.

Breeding-season. June.

Mr. Baker sends me the following note, with the egg: "The history of the egg is as follows: A Captain who was, I think, then an officer in Rattray's Sikhs, of which Colonel R. H. Rattray was C.O., was shooting in Ladak, near the Tso Morari Lake, at an elevation of some 1,400-1,600 ft., when he came across this single egg laid in the sand and fine shingle on the borders of the lake. He shot the female bird and made a rough skin of it, sending both bird and egg to Colonel Rattray, and when the latter's collection was sold I bought this egg, but the remains of the skin had been destroyed. Colonel Rattray, whom I know well, assured me that there was no doubt about the skin, which was for some time in his possession. It was taken on 2nd June, 1888."

DITELMATIAS HARDWICKII.

EAST AUSTRALIAN SNIPE.

(PLATE 166.)*

SCOLOPAX HARDWICKII Gray, Zool. Miscel., p. 16, 1831; Tasmania.*Scolopax australis* Latham (not Scopoli), Index Ornith., Suppl., p. lxx., 1801 (New South Wales); Gould, Birds Austr., Vol. VI., pl. 40, 1848; Sturt, Narr. Exp. Centr. Austr., App., p. 50, 1849; Diggles, Birds Austr., Vol. II., pl. 100, fig. 1., 1877; Seebohm, Geogr. Distr. Charadr., p. 473, 1877.*Totanus australis* Stephens, in Shaw's Gen. Zool., Vol. XII., pt. 1., p. 150, 1824.*Scolopax hardwickii* Gray, Zool. Miscel., p. 16, 1831.*Gallinago australis id.*, List Spec. Birds Brit. Mus., pt. III., p. 111, 1844; Gould, Handb. Birds Austr., Vol. II., p. 271, 1865; Ramsay, Ibis 1866, p. 334; *id.*, Proc. Linn. Soc. N.S.W., Vol. I., p. 190, 1877; *id.*, Proc. Zool. Soc. (Lond.) 1877, p. 339; *id.*, Tab. List Austr. Birds, p. 20, 1888; Legge, Papers and Proc. Roy. Soc. Tasm. 1887, p. 93, 1888; Cox and Hamilton, Proc. Linn. Soc. N.S.W., Ser. II., Vol. IV., p. 420, 1889; Legge, Proc. Austr. Assoc. Adv. Sci., Vol. IV., p. 942, 1892; Sharpe, Cat Birds Brit. Mus., Vol. XXIV., p. 652, 1896; North, Birds County Cumberl., p. 112, 1898; Cheeseman, Trans. New Zeal. Inst. 1898, Vol. XXXI., p. 105, 1899; Kcartland, Birds Melb. Distr., p. 116, 1900; Campbell, Nests and Eggs Austr. Birds, p. 822, 1901; Mattingley, Emu, Vol. I., p. 149, 1902; Legge, *ib.*, Vol. IV., p. 104, 1905; Bryant, *ib.*, Vol. V., p. 24, 1905; Hall, Key Birds Austr., p. 87, 1906; Ingram, Ibis 1908, p. 165; Mathews, Handl. Birds Austral., p. 28, 1908; Littler, Handb. Birds Tasm., p. 145, 1910.*Gallinago australis australis* Mathews, Nov. Zool., Vol. XVIII., p. 223, 1912.*Gallinago hardwickii* Mathews, Austral Av. Rec., Vol. I., p. 188, 1913.

DISTRIBUTION. Japan (breeding), migrating southward to Australia and Tasmania in winter (New Zealand).

Adult male. General colour above dark brown, the feathers everywhere barred and mottled or margined with ochreous-buff; head black, divided in the middle and skirted on each side by sandy-buff, this latter colour more intense on the hind-neck, where it almost obliterates the dark portion of the feathers; lesser upper wing-coverts dark brown, very narrowly fringed with white at the tips; median and greater coverts barred and tipped with ochreous-buff; bastard-wing and primary-coverts dark brown tipped with white; primary- and secondary-quills dark brown* The Plate is lettered *Gallinago australis*.



J. G. Keulemans, del.

W. H. Harvey, sculp.

³/₄
GALLINAGO AUSTRALIS.
(*SNIFE*).

EAST AUSTRALIAN SNIPE.

more or less edged with white at the tips, the outer web of the first primary mottled with buff, the long innermost secondaries black, barred and fringed with ochreous-buff like the scapulars; lower-back, rump, and upper tail-coverts more thickly spotted and barred with sandy-buff, some of the latter fringed with white; middle tail-feathers black with a broad subterminal bar of rufous narrowly lined with black and tipped with white, the rufous and black fading away on the outer feathers, which are for the most part buffy-white; throat and sides of face buffy-white; a dark line from the base of the eye and passing below the latter on to the sides of the neck; fore-neck and sides of neck ochreous-buff with irregular bars of brown; middle of abdomen white; sides of body and flanks barred with brown and white as also the axillaries and under wing-coverts; under tail-coverts sandy-buff barred with brown; bill black; iris brown; feet brown. Total length 324 mm.; culmen 72, wing 157, tail 69, tarsus 37.

Adult female. Similar to the adult male.

Immature. The immature plumage of this species appears to be little different from that of the adult, a more rufous shade being the only noticeable character, though the throat and breast appear more boldly streaked with black.

Nest. A depression in the ground.

Eggs. Clutch, three to four; ground-colour pale stone, blotched all over, but more on the larger end, with dark purplish-red spots and underlying ones of lavender; axis 40-43 mm., diameter 30-31.

Breeding-season. May (Japan).

Mr. J. W. MELLOR reports that these birds were more plentiful many years ago than they are at present. "It has a habit of sitting in the swamp grass and rising like a quail when frightened, making a quick, straight line of flight away from the intruder. One was shot in Tasmania on the top of the mountains of the Great Lake, on 9th December, 1906."

"The Australian snipe is found in suitable localities on the island during the season of its visitation to Tasmania.

"It is a singular fact that the snipe is decreasing in numbers in Tasmania; the country is doubtless not as suited to its habits as in former years, when swamp and favourite marshy feeding grounds were in their primeval state; but there are many tracts of land fit at the present time to hold numbers of snipe, and to which one would think that they would stray on their arrival. Nevertheless they fail to appear in them, and the common lament of the sportsmen is that the snipe are getting scarce."*

"One example of our snipe was seen in Swan Bay, at the south of the lake, under singular conditions. It was feeding among the 'drift lake weed' on the stony shore, and when roused by the approach of our boat, flew a distance of about 150 yards, and again settled in the weed like any ordinary Limicoline species. The snipe is very abundant

* Legge, *Papers and Proc. Roy. Soc. Tasm.* 1887, p. 93, 1888.

THE BIRDS OF AUSTRALIA.

further eastward, among the lesser lakes particularly round Lake Lovell and Woods Lake.”*

“There were not many of this species in the Herbert district, [North Queensland] during my visit, but the few we obtained were among the finest and largest I have ever met with.”†

“During the spring and summer months these migrants visit the swamps at Carrum, Whittlesea and Wirribee, in considerable numbers, but owing to their restless habits they seldom remain in one district for any length of time, so that sportsmen securing good bags one day may search in vain for them the following day. In hot weather they lie close, and are easily shot, but on cool and windy days they are very wild, rising thirty or forty yards away, and after following a zig-zag course for a short distance, dash off out of the district.”‡

“Generally a few arrive on September 1st [at Mudgee District, New South Wales], but the main body come in the middle of the month, and they remain up to February 1st” (Cox and Hamilton).

“This snipe was tolerably plentiful on the open grassy slopes of Fujiyama, where I was fortunately able to observe its breeding habits. In such localities the birds’ presence could not very well be overlooked owing to the very remarkable sounds produced by them during their aerial evolutions, which in some respects were analogous to those indulged in by other members of the genus. About the middle of May (and doubtless from an earlier date) these were being performed throughout the greater part of the day, and it was unusual if one could not observe two or three birds overhead at the same time. Like most avine sounds, the peculiar noise made by this species is almost impossible to be described on paper.

“As the snipe quarters the sky in wide sweeps it gives utterance to a very curious rasping sound, which is increased in volume and considerably changed as the bird suddenly dives downward preparatory to ‘drumming.’ The first of these discordant cries is a harsh, grating *khha*, *khha*, *khha*, and is being constantly repeated during the round-about flight; but when the bird is about to make its downward swoop this is altered to a still stranger utterance—a curious *kee-oow*, *kee-oow*, a sound which I can only liken to the sucking noise sometimes produced by water passing through the narrow waste-pipe of the bath.

“The ‘drumming’ of this species does not differ materially from that of *G. gallinago*, but the ‘swishing’ sound is perhaps louder and on

* Legge, *Emu*, Vol. IV., p. 104, 1905.

† Ramsay, *Proc. Zool. Soc. (Lond.)* 1877, p. 339.

‡ Kearland, *Birds Melb. Distr.*, p. 116, 1900.

EAST AUSTRALIAN SNIPE.

the whole it is less like a bleating of an animal. I believe that both sexes take part in the performance.

"Taking into consideration the habits of its allies, the breeding ground selected by this snipe is very remarkable. For instance, I found newly-hatched and almost helpless young on the perfectly dry mountain side at least a mile and a half from the nearest water, which was in the form of a torrential stream, and apparently never visited by these birds. The ground in question, being composed largely of porous cinders and ashes, (deposited during the comparatively recent volcanic disturbances), dries up with astonishing rapidity even after a heavy downpour of rain. It is, therefore, very difficult to understand how these waders obtain their nourishment, the nearest marsh land or soft ground being many miles distant.

"For a usually shy species, the parents display much concern when their progeny are in danger. In one case on June 6th, while I was handling a young bird three parts grown, the female remained fluttering in the grass within a few paces of me, feigning disablement, and uttering cries of distress and seemingly quite regardless of her own safety. I fancy this snipe will remove its young if they have been disturbed in any way, like a Woodcock, and the Japanese collector declared that he had proved this to be the case. Certainly the two apparently helpless young birds that I found myself on May 26 disappeared in a very mysterious manner. After having carefully examined them I turned my attention for a short time to another nest. Returning to the spot five or ten minutes later I failed to find either of them again, although a very careful search was instituted. Now considering the ground for some distance was tolerably bare of vegetation, their disappearance could, I think, only be explained by the fact that they had been removed by one of the parents."*

The bird figured and described is a male, collected at Cooktown, North Queensland, on March 18th, 1900, by Mr. E. Olive, and presented to me by Mr. H. C. Robinson.

Commonly known as *Gallinago australis* ex Latham, it has escaped notice until I pointed it out this year, that Latham's *Scolopax australis* 1801 was preoccupied by *Scolopax australis* Scopoli 1769. It is thus necessary to take up the next name, given by Gray, in 1831, to a bird from Tasmania in General Hardwicke's collection. This latter bird is still preserved in the British Museum, where I have examined it.

* Ingram, *Ibis* 1908, p. 165.

GENUS—SUBSPILURA nov.

Type *Gallinago megala* Swinhoe.

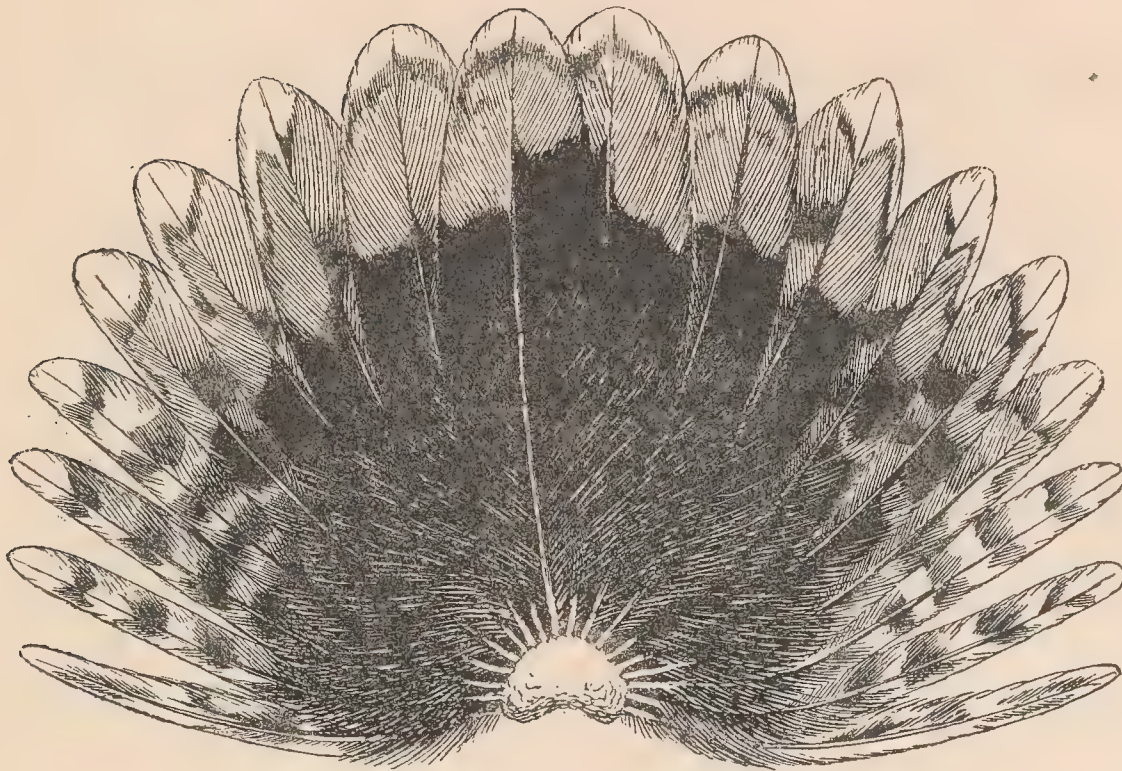
GALLINAGINE birds with twenty tail-feathers, the outer ones attenuated.

The bill is very long, straight and thin, not much expanded at the tip, neither is it noticeably wide nor deep at the base; it is grooved along the upper mandible, but the groove becomes obsolete towards the tip where the bill is punctulate or wrinkled; the tip of the upper mandible extends beyond the lower mandible and is thickened at that point; an obsolete grooving can be seen along the side of the lower mandible, which is likewise punctulate and wrinkled towards the tip. The nostrils are short slits at the base of the bill. The wing is pointed with the first primary longest, and is a little more than twice the length of the culmen. The tibia is unfeathered for a short distance and the metatarsus, which is short, is regularly scutellated before and behind; the metatarsus is a little more than half the length of the bill. The toes are long and there is no webbing between them; the middle toe is very little shorter than the metatarsus, and with the claw much exceeds it. The hind toe and claw are long. The tail is composed of twenty feathers, regularly rounded save that the two central ones are very broad and generally much longer. From the centre to the outside the tail-feathers become thin, so that the outside five on each side are less than 3 mm. in breadth, the outermost being the most attenuated.

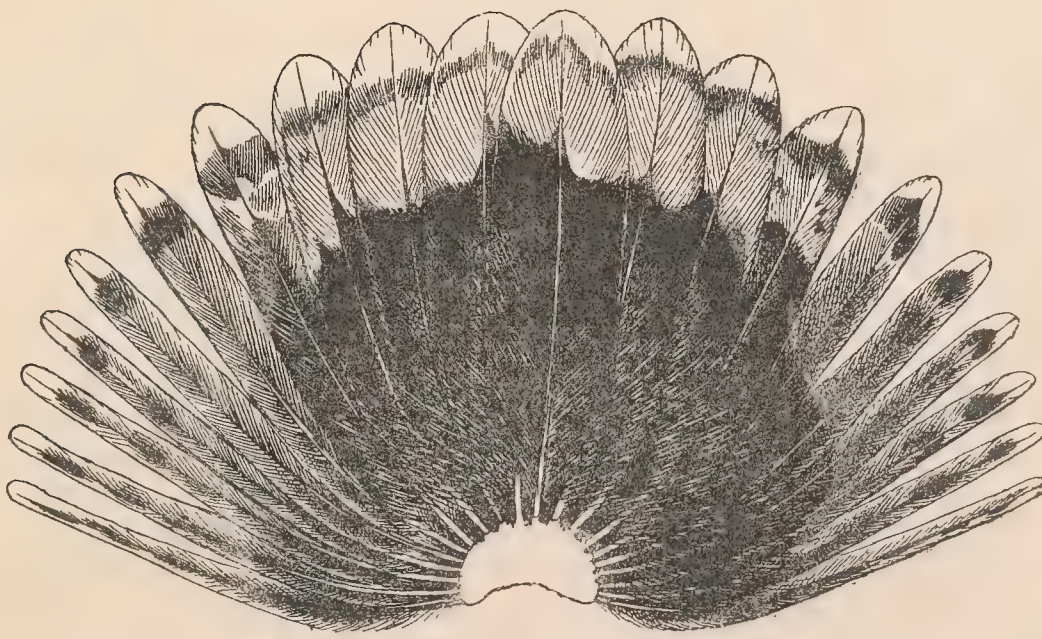
In the genus *Spilura* the tail-feathers are twenty-six in number, and eight on each side are very attenuated; these are also much shorter than the middle ones, but in *Subspilura* no such distinction in size is seen.

On facing page I give accurate drawings of the tails of *Ditelmatis hardwickii* (Gray) and *Subspilura megala* (Swinhoe), for the guidance of Australian ornithologists. I might also point out that the latter may perhaps occur regularly on the East coast, as specimens have been procured in New Guinea.

SUBSPILURA.



DITELMATIAS HARDWICKII.



SUBSPILURA MEGALA.

SUBSPILURA MEGALA.

LARGER PIN-TAILED SNIPE.

(PLATE 167.)*

GALLINAGO MEGALA Swinhoe, Ibis 1861, p. 343; Pekin, China.

Gallinago megala Swinhoe, Ibis 1861, p. 343; *id.*, *ib.* 1863, p. 415; *id.*, Proc. Zool. Soc. (Lond.) 1863, p. 313; *id.*, Ibis 1865, p. 232; Przevalsky, in Rowley's Ornith. Miscel., Vol. III., p. 92, 1878; Salvadori, Ornith. Papua. e Mol., Vol. III., p. 337, 1882; Styan, Ibis 1891, p. 505; La Touche, *ib.* 1892, p. 498; Taczanowski, Mém. l'Acad. Imp. Sci. St. Petersb., Ser. VII., Vol. XXXIX., p. 956, 1893; Sharpe, Cat. Birds Brit. Mus., Vol. XXIV., p. 624, 1906; Mathews, Austral Av. Rec., Vol. I., p. 125, 1912.

Scolopax (Spilura) stenura (not Kuhl) Radde, Reisen Suden von Ost-Sibir., p. 334, 1863.

Gallinago heterocerca Cabanis, Journ. für Ornith. 1870, p. 235 (Luzon); *id.*, *ib.* 1872, p. 317.

Gallinago stenura (not Kuhl) Salvadori, Proc. Zool. Soc. (Lond.) 1878, p. 83.

Gallinago australis (not Latham) Ramsay, Proc. Linn. Soc. N.S.W., Ser. II., Vol. II., p. 172, 1887; Kewartland, Trans. Roy. Soc. South Austr., Vol. XXII., p. 187, 1898; Mathews, Emu, Vol. IX., p. 55, 1909.

Scolopax megala Seebohm, Geogr. Distr. Charadr., p. 479, 1887.

Gallinago australis oweni Mathews, Nov. Zool., Vol. XVIII., p. 223, 1912 (North-west Australia).

Subspilura megala Mathews, List Birds Austr., p. 72, 1913.

DISTRIBUTION. Siberia (breeding), migrating southward to North-west Australia and Northern Territory in winter.

Adult male. Differs from *Ditelmatis hardwickii* (Gray) in its smaller size, and in having twenty tail-feathers, the outer six on each side being very narrow, the outermost being the narrowest and the others increasing in width. The light streaks in the head are much lighter—that is, with only a tinge of buff; the colouring of the upper-surface is much lighter. The two outer tail-feathers are tipped with white, with irregular bands of brown, more noticeable on the inner web; the next four becoming gradually more uniform blackish-brown; distal half of bill blackish-brown, basal half of upper mandible greyish-brown; base of lower mandible grey; iris brown; feet and tarsus lead-grey. Total length 257 mm. (in the flesh); culmen 59, wing 138, tail 55, tarsus 35.

Adult female. Similar to the male.

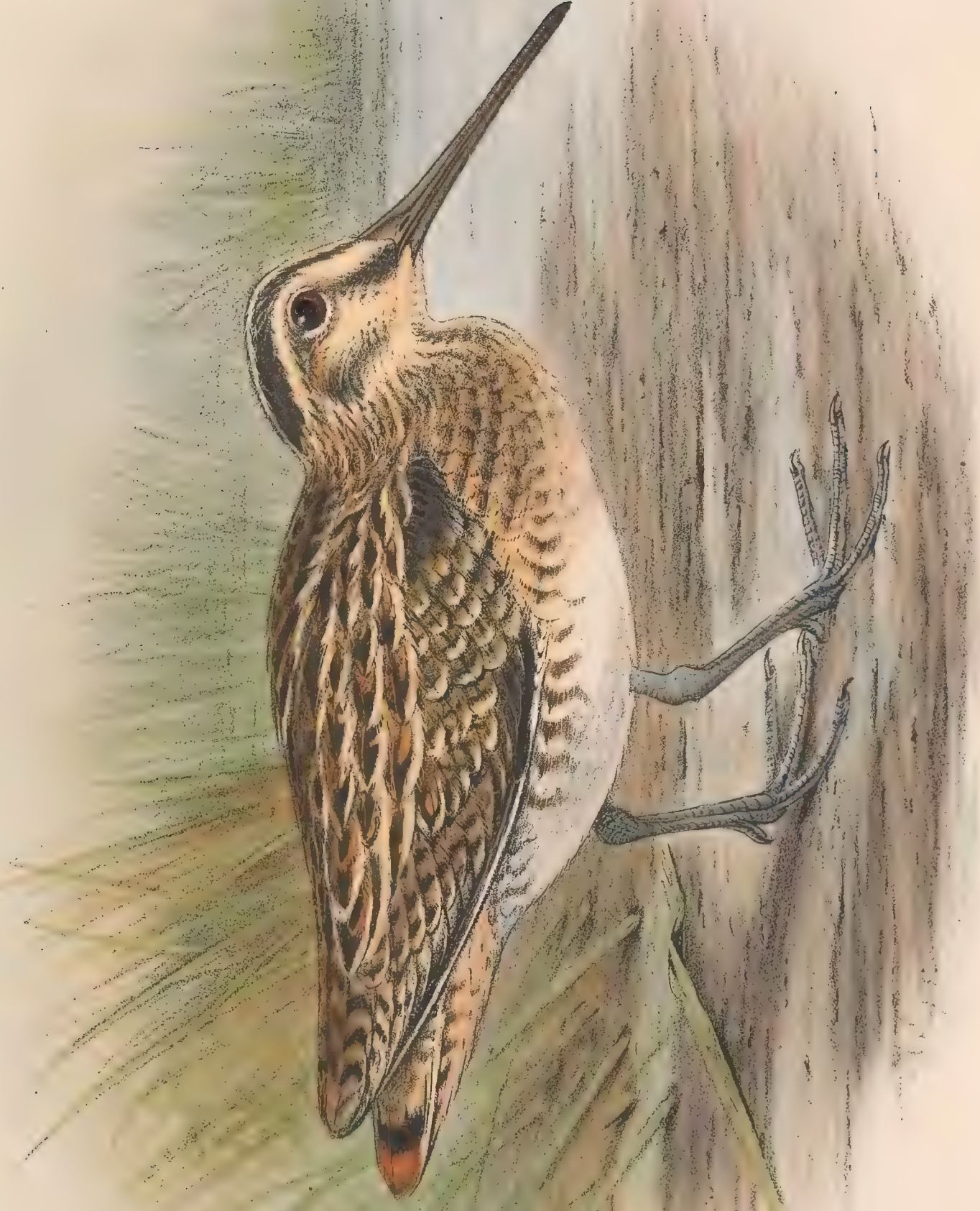
* The Plate is lettered *Gallinago megala*.

H. Grönvold, del

Witherby & Co

4

GALLINAGO MEGALA.
(LITTLE AUSTRALIAN SNIFE).



LARGER PIN-TAILED SNIPE.

Immature. Duller above, with rufous edgings to the feathers above and behind the eyes, to the inner webs of the scapulars and upper tail-coverts; the wing-coverts more dusky; the markings on the scapulars and secondaries are more rufous; the outer tail-feathers lack the bold white tips of the adult, the markings being dusky; the under tail-coverts are also dusky-rufous, not pale buffy-white, and the feathers of the throat and upper-breast have longitudinal black centre-streaks.

Nest. A hollow, lined with grass.

Eggs. "Clutch four. These eggs are rather short and thick, resembling in their shape those of the Woodcock, but rather more oval, and some even are typical of this latter form; ground colour, creamy white or a little more yellow or pale, dirty ochre. The spots of the lower end are of pale reddish, the upper reddish-brown or brown; the larger ones slanting, and coming together at the larger end, where there are also sometimes either zig-zags or spots; on the rest of the surface there are only dots and little stripes. Axis 40-43 mm.; diameter 30-32." (Taczanowski.)

Breeding-season. June (Siberia, Taczanowski).

I FIRST added this species to the Australian List, in the *Austral Avian Record*, Vol. I., p. 125, 1912, from skins collected in North-west Australia by Mr. J. P. Rogers, and I now extend its Australian range to the Northern Territory, from skins collected on Melville Island by the same man.

It seems strange that this very good species should have been overlooked for so many years by Australian ornithologists, especially as Gould pointed out in 1848 that the tail-feathers of birds from Port Essington were different from the tail-feathers of birds from Tasmania, in having the four lateral feathers narrower. Yet Ramsay, in his *Tab. List Austr. Birds*, p. 20, 1888, considered it identical with the Eastern bird, and "other Australians, good at discriminating species and forms," appeared to think that one species went all over Australia. Legge (*Papers and Proc. Roy. Soc. Tasm.* 1887, p. 93, 1888) thought Gould's bird might be *megala*, but in 1892 he apparently considered there was only one species that visited Australia.

It is found breeding from Lake Baikal to the Sea of Japan.

Mr. J. P. Rogers found this species fairly common in the North-west of Australia. He says they were numerous on the 18th of January, 1909, on the marshy plain, sufficient rain having fallen to fill the crab-holes. "They have gathered here as there are a few acres of moist, marshy ground around the swamps, and this is the only suitable place I have seen for them. I saw about one hundred birds in about two hours, either in singles or pairs. By April the 19th they had all gone away." The same collector also found them on Melville Island, Northern Territory.

"On the south of Lake Baikal it is very common in spring migration, it passed in large flocks early in May, and remains there in small numbers for the nesting. At this time it is not in such large flocks, as the Common Snipe, but one can say that isolated pairs are dispersed over the dry prairies

THE BIRDS OF AUSTRALIA.

more or less covered with bushes. It nests in a dry, grassy place; the nest is a little hollow lined with dried grass. Like all other Snipe it sits closely on four eggs, so closely that one can almost walk on it. Near its young it is very courageous and tries to lead one away by fluttering along the ground. We found the eggs in June, and the bird often remains till October. When flying it makes a humming noise by which it is easily recognised.

"The male rises in a manner like that of a Snipe, and after having described vast circles above the place where the female is, he darts down in an oblique direction, making (probably with his tail feathers like our Snipe) a loud noise. This noise gains in strength, the nearer it approaches the earth, stops a short distance from the ground, and the bird continues its flight, repeating a sound like *Tirik, Tirik, Tirik*.

"These evolutions last till the end of June, being most noticeable in the morning and evening, but during fine weather they may often be heard in the middle of the day, and during the night. This bird is an earlier riser than the others, and begins its movements the first.

"According to Nikolski this Snipe appears to nest in the southern and central parts of the island of Saghalien."*

"This is the Great Snipe of China. I found it on the marshes near Peking in September. At the close of the same month it passes down the coast, being found at Shanghai, Amoy and Canton for a few days only, and apparently bound further southwards. At the end of April and beginning of May it occurs on South China again for a few days and is then bound north. During the season of its migration, I procured it also in S.W. Formosa."†

"They generally occur singly, but I have put up two or three at a time. When flushed, they rise, somewhat clumsily, with a loud cry and hurry away with a low almost straight flight."‡

"Arrives at Foochow towards the end of March and remains till the beginning of May. The autumn passage begins about the middle of August and the birds are fairly abundant throughout September and part of October. At Swatow, strange to say, this Snipe is almost unknown. I only saw one during the two years that I spent at that port; it was shot in April by my shooting-boy, some distance up the Keyong River."§

"Breeds abundantly on the marshes and lakes in the Hoang-ho Valley. We also noticed some of the present and preceding species (*Gallinago heterocerca*) in the western portion of the Urot country, where they probably were breeding.

* Taczanowski, *Mém. l'Acad. Imp. Sci. St. Petersb.*, Ser. VII., Vol. XXXIX., p. 958, 1893.

† Swinhoe, *Proc. Zool. Soc. (Lond.)* 1863, p. 314.

‡ *id.*, *Ibis* 1863, p. 416.

§ La Touche, *ib.* 1892, p. 498.

LARGER PIN-TAILED SNIPE.

"At Lake Hanka *G. megala* appears later than *G. heterocerca*, namely in the end of April; but the principal migration takes place about the middle of May. It stops to breed there only in very limited numbers, but becomes again numerous in August during migration. In Spring it keeps to the burnt marshes, and in autumn to the damp steppes."*

The bird figured and described is a male (the type of *Gallinago australis oweni*), collected on the North-west of Australia on January 19th, 1909, by Mr. J. P. Rogers.

* Przevalsky, in Rowley's *Ornith. Miscel.*, Vol. III., p. 92, 1878.

FAMILY—ROSTRATULIDÆ.

GENUS—ROSTRATULA.

ROSTRATULA Vieillot, Analyse Nouv. Ornith., p. 56,							
1816 (April)	..	..	..	..	..	Type	<i>R. capensis.</i>
<i>Rhynchæa</i> Cuvier, Règne Anim., Vol. I., p. 487, 1816							
(Dec.)	..	..	..	..	..	Type	<i>R. capensis.</i>

Also spelt—

Rhynchina Fleming, Philos. Zool., Vol. II., p. 255, 1822.

Rhynchea Boie, Isis 1826, p. 979.

Rhynchæa Gray, Zool. Miscel., p. 18, 1831.

Rhynchaena Gloger, Hand u. Hilfsb. Naturg., p. 424, 1842.

SCOLOPACINE (?) birds with long decurved bills, long wings, long legs and feet.

The bill is long, hard, narrow, and decurved at the tip ; a deep narrow groove extends more than half-way along the sides of the upper mandible and ends abruptly ; the bill is narrow at the base and about the same width all the way, somewhat flattened immediately after the ending of the groove, but then the tip is obsoletely keeled with a slight grooving at the sides ; the under mandible can scarcely be said to be grooved, but shallowly channelled on the side, and the tip of the same form as that of the upper mandible. The culmen is less than one-third the length of the wing and about equal to the metatarsus, which is longer than the middle toe.

The wing is somewhat concave though the first primary is longest, the second and third being little shorter.

The metatarsus is scutellate in front and behind with part of the tibia unfeathered; the toes are long with no interwebbing; the tail is short, composed of sixteen feathers. I can see no close relationship between the birds of this genus and Gallinagine birds.

Seebohm (*l.c.*, p. 456) placed them in the *Charadriidæ*, but the only argument he produced reads: "There can scarcely be any doubt that the affinities of *Rhynchæa* are with *Scolopax (sensu lat.)*. The pale mesial line on the crown and the two pale stripes on the back can scarcely have been independently acquired, and were doubtless inherited from a common ancestor, showing how important certain arrangements of colour sometimes are as generic characters, in many cases dating far earlier than the so-called

ROSTRATULA.

structural characters.” As *Scolopax rusticola* Linné, the type of *Scolopax*, has no mesial line on the crown nor pale stripes on the back, little value can be attached to Seebohm’s dictum.

In the *Catalogue* of the Birds in the British Museum, Vol. XXIV., p. 521, 1896, Sharpe simply included the genus in the subfamily *Scolopacinae* with the diagnosis:—

“Tarsus equal to the middle toe and claw: bill not perceptibly widened at the end nor pitted: the tip decurved: sexes remarkably dissimilar in plumage.”

Examination shows the species of *Rostratula* to have a bill dissimilar in most respects to that of a Scolopacine bird; to have the eye normally placed and not like that of a Snipe; to have a very dissimilar style of plumage with sexes differently coloured; to lay peculiarly coloured eggs.

Without careful criticism of the plumage-changes and study of the internal anatomy, it is impossible to accurately place the genus, and though it seems to have little close affinity with the *Scolopacidæ*, I am leaving it in the neighbourhood but placing it in a separate family *ROSTRATULIDÆ*.

ROSTRATULA AUSTRALIS.

AUSTRALIAN PAINTED SNIPE.

(PLATE 168.)*

RHYNCHÆA AUSTRALIS Gould, Synops. Birds Austr., pt. iv., App., p. 6, 1838; New South Wales.

Rhynchæa australis Gould, Synops. Birds Austr., pt. iv., App., p. 6, 1838; *id.*, Proc. Zool. Soc. (Lond.) 1837, p. 155, 1838; *id.*, Birds Austr., Vol. VI., pl. 41, 1842; Sturt, Narr. Exp. Centr. Austr., App., p. 50, 1849; Gould, Handb. Birds Austr., Vol. II., p. 274, 1865; Ramsay, Proc. Zool. Soc. (Lond.) 1877, p. 339; Diggles, Handb. Birds Austr., Vol. II., pl. 100, 1877; Ramsay, Proc. Linn. Soc. N.S.W., Vol. I., p. 190, 1877; Wood-Mason, Proc. Zool. Soc. (Lond.) 1878, p. 747; Ramsay, Proc. Linn. Soc. N.S.W., Ser. II., Vol. I., p. 1060, 1887; Seebohm, Geogr. Distr. Charadr., p. 458, 1887; Ramsay, Tabl. List Austr. Birds, p. 20, 1888; North, Austr. Mus. Cat., no. 12, p. 311, 1889; Legge, Proc. Austr. Assoc. Adv. Sci., Vol. IV., p. 941, 1892; Campbell, *ib.*, Vol. V., p. 442, 1893; Keartland, Trans. Roy. Soc. South Austr., Vol. XXII., p. 187, 1898; North, Birds County Cumberl., p. 112, 1898.

Scolopax australis Ramsay, Proc. Linn. Soc. N.S.W., Vol. VII., p. 57, 1882.

Rostratula australis Stejneger, Stand. Nat. Hist., Vol. IV., p. 111, 1885; Sharpe, Cat. Birds Brit. Mus., Vol. XXIV., p. 690, 1896; Campbell, Nests and Eggs Austr. Birds, p. 826, 1901; Bryant, Emu, Vol. V., p. 23, 1905; Hall, Key Birds Austr., p. 87, 1906; Berney, Emu, Vol. VI., p. 114, 1907; Austin, *ib.*, Vol. VII., p. 77, 1907; Mathews, Handl. Birds Austral., p. 29, 1908; Ingram, Ibis 1909, p. 614; Mathews, Emu, Vol. X., p. 103, 1910; Hall, *ib.*, Vol. X., p. 138, 1910; Mathews, List Birds Austr., p. 73, 1913.

Gallinago (Scolopax) australis (not Latham) Ramsay, Proc. Linn. Soc. N.S.W., Ser. II., Vol. I., p. 1060, 1887.

Rostratula capensis australis Mathews, Nov. Zool., Vol. XVIII., p. 224, 1912.

Rostratula australis fitzroyi id., Austral Av. Rec., Vol. I., p. 85, 1912 (North-west Australia).

DISTRIBUTION. Australia and Tasmania.

Adult female. Head olive-brown, minutely barred with black and divided in the middle by a white line from the base of the bill over the top of the head, a white eye-ring which widens out at the back of the eye into a large white spot; nape and hind-

H. Grönvold. del.

Witherby & Co

$\frac{3}{4}$

ROSTRATULA AUSTRALIS.

(PAINTED SNIPE).



AUSTRALIAN PAINTED SNIPE.

neck chestnut, the feathers minutely barred with black; upper-back and scapulars greenish-grey, the feathers minutely speckled and barred with dark brown; the inner webs of the inner scapulars buff which form a longitudinal line on each side of the back; the upper, lesser, median, and greater wing-coverts with narrow dark cross-bars; some of the primary-coverts, inner primaries, and secondaries silvery-grey, with narrow bars of black and buff and also white blotches edged with black, the long innermost secondaries more inclining to dark green barred and finely vermiculated; outer primary-quills brown, darker towards the base, with golden-olive on the outer webs and oval spots of buff; lower-back, rump, upper tail-coverts, and tail silvery-grey, with wide bars of white or buff and very narrowly lined across with black; lores, sides of face, sides of neck, throat, and fore-neck dark brown, more or less mixed with white especially on the chin and throat; a patch of dark brown on each side of the breast which terminates with olive-coloured feathers which are very narrowly barred; a broad band of white on each side of the fore-neck, which extends in a narrow line on each side of the mantle, where it joins the buff streak on the inner scapulars; middle of breast, abdomen, and under tail-coverts white like the axillaries and inner under wing-coverts; marginal under wing-coverts and the greater series grey, minutely barred with black and tinged with golden-olive; bill yellowish-brown; iris hazel; feet blue-grey. Total length 290 mm.; culmen 45, wing 150, tail 52, tarsus 43.

Adult male. Differs chiefly from the adult female in its smaller size and by the absence of the chestnut on the hind-neck, the more golden-olive on the upper wing-coverts, which have large twin spots of buff, and by the much paler and more white on the throat and fore-neck; bill, iris, feet, and legs brown. Total length 282 mm.; culmen 41, wing 139, tail 49, tarsus 38.

Nest. A depression lined with grass.

Eggs. "Clutch four. Ground-colour cream-white, almost completely hidden by irregular broad lines of black wound round the thicker end and extending longitudinally towards the thin end, the lines are curved and twisted forming loops and blotches. Axis 30-31 mm.; diameter 27-28." (Ramsay.)

Breeding-season. November and December.

MR. J. W. MELLOR writes: "It is by no means plentiful but occasionally it may be seen singly or in pairs in the swampy lands, where there is a certain amount of grass.

"A nest of this bird was found at 'Holmfirth,' Fulham, Adelaide, South Australia, on November 6th, 1908. The nest was placed in a slight hollow in the ground, beside a small tussock of grass, and was composed of a few leaves and bits of grass; the ground was soft and boggy. The nest was visited several times with the field glasses, and when the bird began to sit, I was able to get closer and found that it was always the male bird that was on the eggs; the female being the brighter of the two kept out of sight during the time the nest was visited, which was always in the day-time. The bird would always slink out of the side of the nest, and glide through the short grass for a couple of yards, before flying up with a sharp, quick flight, and would pitch down again about a couple of hundred yards away in the

THE BIRDS OF AUSTRALIA.

grass, where it would sit until flushed again. The eggs are beautifully and curiously marked with large irregular blotches of dark blackish-brown on a light brown ground-colour, there being lines of dark colour joining the various blotches. The birds I have seen about at the Reedbeds on various occasions, and generally about Christmas-time or what is known as our summer."

"That this species occasionally visits the district near Rockingham Bay [Queensland] is proved by some fine specimens having been shot and skinned by Inspector Johnstone. These were procured a short time prior to my visit, and were still in his possession at the time of my sojourn under his hospitable roof.

"The Painted Snipe is by no means a common bird; and although during an occasional very wet season this species may be obtained in tolerable numbers, yet its visits are very uncertain and few and far between. In New South Wales I have obtained specimens from the Clarence River and Lake George; but nowhere have I ever found it plentiful."*

"On 26th July, 1906, I flushed a single bird in the vicinity of a bulrush swamp [Richmond, North Queensland] and following it, flushed it a second time to make sure of its identification; never saw it out here before."†

Mr. J. P. Rogers found this bird exceedingly rare in the North-west of Australia.

"On 14th August a fine bird of this species was shot . . . as it was wading in the shallow water of the creek at the camel dépôt. It proved to be a female, well developed, and would soon have laid."‡

I think it best for the present to consider the birds from North-west Australia the same as those from the eastern side.

Captain Bowyer Bower, writing from Derby, North-west Australia, says: "These birds can generally be observed on a sandy ridge, thinly covered with small bushes, but with long grass which grows in bunches to a height of some four or five feet; between these bunches may be seen the birds running rather quickly. They generally rise in fours or fives and often separate into pairs or go singly away for some sixty or one hundred yards. They generally rise about fifteen to twenty feet before one and their flight is noiseless and slow; at first they fly straight for a little distance and then turn at an almost right angle. The formation of the trachea in the female is singular: it takes four convolutions before entering the lungs, being coiled as it were between

* Ramsay, *Proc. Zool. Soc.* (Lond.) 1877, p. 339.

† Berney, *Emu*, Vol. VI., p. 114, 1907.

‡ Keartland, *Trans. Roy. Soc. South Austr.*, Vol. XXII., p. 187, 1898.

AUSTRALIAN PAINTED SNIPE.

the 'merrythought.' Another female secured had no such peculiar trachea. On being dissected it showed clearly to be a female, but it had not only assumed the plumage of the male, but had an ordinary trachea."

The female figured and described was collected by the late W. Stalker in the Northern Territory on April 2nd, 1906. The male described was collected on Parry's Creek, North-west Australia, on March 19th, 1909, by Mr. J. P. Rogers.

FAMILY—J A C A N I D Æ .

THE recent Zoological Congress having confirmed the Opinions of the International Commission on Nomenclature that, notwithstanding the wording of the Laws, the genera introduced by Brisson must be utilised under the Code, these generic names will be hereafter used by me. My own views have been expressed in my articles in the *Novitates Zoologicae*, etc., and though my arguments have never been controverted, I submit to the opinion of the majority in the hope that by this means uniformity will be attained.

Consequently the family "*Parridæ*" must be known as "*Jacanidæ*," Brisson having proposed the genus *Jacana* before Linné introduced his genus *Parra*.

The family *Jacanidæ* is coequal with the suborder *Jacanæ*, and constitutes one of the most remarkable natural groups in the Class *Aves*. The general definition of the family given in the *Catalogue* of the Birds in the British Museum, Vol. XXIV., p. 68, reads :—

"General aspect that of a Rail. Toes enormously long, and armed with straight spur-like claws, the hind toe very long, with a claw exceeding it in length."

Examination of the internal structure has necessitated their reference to the *Charadriiformes*, and if this be correct, their nearest allies in that Order would appear, from external features, to be the Vanelline forms. They have a similar style of plumage: brown, black, green, red, yellow and white in association, but they are never spotted or mottled in the adult state. The species possess frontal shields, facial lappets, and spurs on their wings. The latter feature is said to differ in origin to that of the Vanelline birds.

Their distribution is tropical and subtropical throughout the world, thereby being practically coincident with that of the Vanelline birds.

Their eggs number four, and are of characteristic coloration and markings.

Many genera are admitted owing to the variation in the length of the wings, tail and legs, and difference in facial ornamentation and general coloration. Only one species is found in Australia which is representative of a

IREDIPARRA.

monotypic genus: it is distinguished from all the others at a glance in having a frontal leaf-like lappet with an erect central comb. It approaches nearest in coloration to the East Indian *Metopidius*, than which it is less in size, with other details. The coincidence of coloration, however, suggests that the Australian bird is a degenerate and specialised descendant of *Metopidius*.

In all the species a prominent rhamphotheca is present, the nostril placed in the basal portion in a groove: no groove is present in the lower mandible. The metatarsal covering consists of regular scutes which, on account of the length of the metatarsus, shows throughout the group a strong tendency to fusion—in many genera a complete podotheca being observed in adult and senile birds, though the regular scutellation can be easily seen in immature specimens.

GENUS—I R E D I P A R R A .

IREDIPARRA Mathews, Nov. Zool., Vol. XVIII., p. 7, 1911

Hydralector Auct., not *Hydralector* Wagler. Type *I. gallinacea* Temminck.

JACANINE birds with short bills, peculiar facial ornament, long wings, short tails, and long toes with very long claws.

The culmen is short with a notable rhamphotheca, the nostrils pervious and placed before the middle of the mandible in a shallow groove; no groove present in the lower mandible. At the base of the mandible arises a large leaf-like lappet of bare skin with a thin erect upright comb running up the centre of the head. The wing is long and the primaries are normal in shape: the first primary is longest; the tail is short and rounded; the metatarsus long and regularly scutellate, the scutes sometimes fusing; the toes are very long, not webbed either internally or externally; and the claws are longer, quite straight, and tapering to a fine point. The claw of the hind toe is extraordinarily lengthened, being longer than the hind toe and the metatarsus.

The use of *Irediparra* is necessary for the reasons given at its introduction at the place stated above—which may be here summarised. Wagler split up the Jacanine birds into many genera, and in the *Isis* 1832, p. 279, he proposed *Metopidius* for “Latham’s *Parra africana* und Cuvier’s *Parra ænea*.” In the *List Genera Birds* 1840, p. 71, Gray selected Cuvier’s *Parra ænea* as the type of *Metopidius*, and this action must be respected, though it is more than probable that Wagler intended his genus to be based upon Latham’s *Parra africana*. However, no question can now be raised, and *Metopidius* has been constantly used in this connection.

On p. 280 (*Isis*) Wagler then separated the genus *Hydralector* for “Vieillot’s *Parra cristata*, Nouv. Dict. 16, p. 450, und Temminck’s *Parra gallinacea*, Pl. Col.” Gray selected as type of *Hydralector*, Vieillot’s *Parra cristata*—and no exception can be made to this determination. It was later found that *Parra gallinacea* Temminck was not congeneric with Vieillot’s bird, which was also shown to be identical with Cuvier’s *Parra ænea*, of which the earliest name was *Parra indica*. Then *Hydralector* was allotted to Temminck’s bird, though really it was an absolute synonym of *Metopidius*. No excuse can be made for this transference, so that it was incumbent upon me to find a new name for the Australian bird, and I therefore introduced *Irediparra*.

IREDIPARRA GALLINACEA NOVÆ-HOLLANDIÆ.

EASTERN COMB-CRESTED JACANA.

HYDRALECTOR NOVÆ-HOLLANDIÆ Salvadori, Ornith. Papua. e Moll., Vol. III., p. 309, 1882; New South Wales.

Parra gallinacea (not Temminck) Ramsay, Ibis 1865, p. 305; *id.*, *ib.* 1867, p. 417, pl. VIII., fig. 3; *id.*, Proc. Linn. Soc. N.S.W., Vol. II., p. 199, 1878; *id.*, Proc. Zool. Soc. (Lond.) 1877, p. 344; *id.*, Tab. List Austr. Birds, p. 21, 1888; North, Austr. Mus. Cat., no. 12, p. 327, 1889; Cox and Hamilton, Proc. Linn. Soc. N.S.W., Ser. II., Vol. IV., p. 421, 1889 (Mudgee); Lumholtz, Among Cannibals, p. 22, 1889.

Hydralector novæ-hollandiæ Salvadori, Ornith. Papua. e Moll., Vol. III., p. 309, 1882.

Hydralector gallinaceus (pars) Sharpe, Cat. Birds Brit. Mus., Vol. XXIV., p. 79, 1896; Hall, Key Birds Austr., p. 80, 1899; Campbell, Nests and Eggs Austr. Birds, p. 773, 1901; Hall, Key Birds Austr., p. 80, 1906; Mathews, Handl. Birds Austral., p. 29, 1908; Ingram, Ibis 1908, p. 463.

Irediparra gallinacea novæ-hollandiæ Mathews, Nov. Zool., Vol. XVIII., p. 224, 1912; *id.*, List Birds Austr., p. 73, 1913.

DISTRIBUTION. New South Wales (as far South as Mudgee); Queensland (as far North as Cooktown).

Adult male. Hinder-crown, hind-neck and mantle black like the lower-back and rump, the feathers tinged with metallic-purple; back, scapulars, and wings light bronze-brown; lesser upper wing-coverts round the bend of the wing, bastard-wing, primary-coverts and quills deep black with a metallic-purple tinge; tail white at the extreme base, the remainder bronze-black; a short narrow line of black on the lores, a white spot in front of the eye; sides of face, ear-coverts, sides of neck and fore-neck golden-buff; chin and entire throat white; the feathers of the breast deep black with white bases; sides of body, axillaries, and under wing-coverts uniform black; abdomen, thighs, under tail-coverts, and sides of rump buffy-white; bill—distal half black, extreme tip brown, basal half and frontal plate pale red; iris pale yellow, eyelids blue; feet and legs olive-brown. (Olive gives the coloration of the feet of a female killed at Cooktown as "slate colour.") Total length 205 mm.; culmen and comb 37, wing 122, tail 35, tarsus 56.

Adult female. Similar to the adult male but larger. Total length 225 mm.; culmen and comb 44, wing 142, tail 37, tarsus 64.

Young (bird of the first year). Differs chiefly from the adult in having the loreal streak, entire head and nape rufous, the feathers of the back, scapulars, and wings with rufous margins, the upper tail-coverts and tail dull black tipped with rufous, and the entire under-surface of the body white with a tinge of buff on the fore-neck and breast.

Immature (bird of the second year). Shows an advance towards the adult-plumage by the appearance of black intermixed with rufous on the head, the black loreal streak,

THE BIRDS OF AUSTRALIA.

the encroachment of black on the sides of the breast, and the outline of golden-buff on the sides of the neck and the fore-neck, but still leaves an open space on the breast which is completely covered with black in the next stage.

Nestling (just out of down). Has a reddish head; very dark brown hind-neck and mantle; upper-back brown with rufous edges to the feathers; lower-back black with rufous edges, giving a barred appearance; wings buff; under-surface white, the frontal plate just showing.

Nest. "Composed of sedge, grass and aquatic plants, placed close to the water's edge, or upon any bunches of weeds or grass growing in the water, which may be sufficiently strong to bear its weight" (Ramsay).

Eggs. Clutch, four; very much darker and more highly polished (glossy) than those from Melville Island; axis 28-31 mm., diameter 21-23.

Breeding-season. September to January.

"THIS *Parra* is tolerably abundant throughout the swampy regions which abound over the eastern portion of Queensland and north-eastern parts of New South Wales . . . It is found most plentiful in the Rockhampton districts wherever the swamps and lagoons occur; the leaves of the gigantic *Nymphaea* and *Nelumbium* afford a safe retreat for this species. I know of few more interesting or more pleasing sights than a troop of this handsome *Parra* wandering among the bright blue and crimson blooms of the giant water-lilies which abound in almost every sheet of water of any extent in North-eastern Queensland."*

For many years the Jacana of the East Indies and Australia were considered to be identical, and Ramsay, receiving birds from New Guinea, was the first to point out that these differed from specimens from New South Wales, and named the New Guinea birds *Hydralector novae-guineae*. Salvadori, working upon the birds of the Moluccas and New Guinea, pointed out that though the New Guinea birds were obviously different, it was the Australian bird which needed a new name, as the type of Temminck's *Parra gallinacea* came from Celebes. He therefore named the New South Wales bird *Hydralector novae-hollandiae*. When Sharpe wrote up the *Catalogue of Birds* he quite wrongly lumped all the forms together under the name *Hydralector gallinaceus*.

In the *Nov. Zool.*, Vol. XVIII., p. 224, 1912, I revived Salvadori's name for the New South Wales bird and also differentiated the North-west Australian form as *Irediparra gallinacea rothschildi*, diagnosing it thus: "Differs from *I. g. novae-hollandiae* in its darker coloration, therein approaching *I. g. novae-guineae*, but not as dark as that form."

I later separated the Melville Island breeding form as follows: "Differs from *I. g. rothschildi* in having the yellow and black bands on the under-surface less pronounced. It has also a heavier bill."

* Ramsay, *Proc. Zool. Soc.* (Lond.) 1877, p. 344.

EASTERN COMB-CRESTED JACANA.

I am at the present time attaching the Melville Island form to the North-west Australian subspecies, but longer series from the latter locality will, I have no doubt, confirm my judgment in separating the Island form.

It is interesting to record the peculiar intervention of the New Guinea race between the Celebes bird and the New South Wales bird. It is so different that it might almost be regarded as specifically distinct were it contrasted with the Celebes or New South Wales birds alone. The Celebes birds differ from the East Australian birds in having a noticeably broader black patch across the breast with a deeper blue-black sheen; in the blue-black of the neck extending on to the upper-back; the wing-coverts and middle back-feathers are dark oil-green, the upper tail-coverts and rump-feathers are deeper blue-black, and the tail is dark oil-green black, not bronze-black. *I. g. novæ-guinæ* has the blue-black extending right on to the back, so that the whole upper-surface is almost uniformly black; wherever bronze coloration occurs in the Australian bird, the New Guinea bird shows deep oil-green, a difference which must be seen to be understood. No confusion is possible with New Guinea and Australian birds, though the Celebes birds have to be carefully compared with the latter, the different coloration of the tail being a good character for separation.

The birds described were collected near Rockhampton, Queensland.

IREDIPARRA GALLINACEA ROTHSCILDI.

WESTERN COMB-CRESTED JACANA.

(PLATE 169.)*

IREDIPARRA GALLINACEA ROTHSCILDI Mathews, Nov. Zool., Vol. XVIII., p. 224, 1912 ; North-west Australia.

Parra gallinacea (not Temminck) Gould, Birds Austr., Vol. VI., pl. 75, 1843 (Port Essington) ; *id.*, Handb. Birds Austr., Vol. II., p. 330, 1865 ; Masters, Proc. Linn. Soc. N.S.W., Vol. II., p. 275, 1878.

Hydralector gallinaceus Le Souëf, Emu, Vol. II., p. 157, 1903 (N.T.) ; Hartert, Nov. Zool., Vol. XII., p. 202, 1905 (N.T.) ; Mathews, Emu, Vol. IX., p. 56, 1909 (N.-W. A.).

Irediparra gallinacea rothschildi Mathews, Nov. Zool., Vol. XVIII., p. 224, 1912 ; *id.*, Austral Av. Rec., Vol. I., p. 55, 1912 ; *id.*, List Birds Austr., p. 73, 1913.

Irediparra gallinacea melvillensis id., *ib.*, Vol. I., p. 73, 1912 (Melville Island, Northern Territory).

DISTRIBUTION. North-west Australia ; Northern Territory.

Adult male. Differs from *I. g. novæ-hollandiæ* in being darker above. Total length 197 mm. ; culmen and comb 42, wing 116, tail 36, tarsus 56.

Adult female. Similar to the adult male but larger. Total length 244 mm. ; culmen and comb 49, wing 138, tail 44, tarsus 70.

Nestling and Immature. Very similar to those in the same state of plumage from Queensland.

Nest. The eggs are placed on the floating roots of a water-lily, with some rotting vegetation (old leaves, etc.). There is no trace of a nest. The patch of roots measures 10 in. across. The eggs are only half an inch above the water-line and their lower sides are often quite wet.

Eggs. Clutch, four ; ground-colour brownish-buff, marked all over with lines of blackish-brown ; axis 31 mm., diameter 21.

Breeding-season. January (Melville Island) ; September and January (Northern Territory, Le Souëf).

MR. J. P. ROGERS, writing from Melville Island, Northern Territory, on January, 1912, says : Many pairs of these birds were seen in Jessie Creek, where it runs through the great swamp ; this creek is bordered with a belt of water-lilies in places fifteen yards wide. The lilies are of the blue and white

*The Plate is lettered *Irediparra novæ-hollandiæ*.



J G Keulemans del.

Merby & Co

$\frac{4}{5}$

IREDIPARRA NOVÆ-HOLLANDIÆ.
(COMB-CRESTED JACANA).

WESTERN COMB-CRESTED JACANA.

varieties, and are the favourite haunt of these birds, their long toes making their passage along the top of the floating vegetation quite easy. I found the eggs by shooting the old bird as it left the nesting-site. In the young the frontal lappet was very small. In the eggs, which contained large young ones, the lappet was barely discernible and the feet were almost normal; no long claws were developed, although the feathers were quite formed.

“At the slightest alarm they dive down at once or take flight. Their powers of diving and of remaining under water are equal to those of any bird I have ever met with; on the other hand their powers of flight are very weak; they will, however, often mount up fifteen or twenty yards and fly from one end of the lake to the other, a distance of half or three-quarters of a mile, but generally they merely rise above the surface of the water and fly off for about a hundred yards. During flight their long legs are thrown out horizontally to their full length; when feeding they utter a slowly-repeated *cluck-cluck*.”*

The bird figured and described is the type-male, collected on Parry's Creek, North-west Australia, on January 6th, 1909; the female was obtained at the same time and place by Mr. J. P. Rogers.

* Gilbert, in Gould's *Handb. Birds Austr.*, Vol. II., p. 331, 1865.

FAMILY—GLAREOLIDÆ.

THE Coursers and Pratincoles are combined together in a family *Glareolidæ*, which again is coequal with the suborder *Cursorii* in the *Catalogue* of the Birds in the British Museum. They differ from Charadriine birds in the nature of their bills and their legs and feet.

In their bills there is no groove in the upper mandible, such as is seen in these, but instead is a shallow depression which has the nostrils placed in its anterior portion: the bill is also more or less broad at its base and tapering to a point: the linear nostrils are parallel to and lie along the outer edge. The legs are covered both before and behind with regular scutellations.

In their other characters much variation is expressed, some having long bills, others very short; short wings and very long wings also appear; short rounded tails and very long deeply-forked tails occur, while some species have very long legs and others just as abnormally short ones. The middle claw sometimes shows pectinations, but not always, as has been often stated. The critical examination of the whole of the species of the family led to the discovery that the "Australian Dotterel" is a very aberrant form, and was not a Plover, as had been generally suggested. As an example of the folly of lumping species into one genus, can be cited my action in classing this species under *Charadrius* in the *Novitates Zoologicae*, Vol. XVIII. At that time, imbued with the idea that by minimising differences better results would be obtained by the use of large groups as genera, I concluded that as the chief difference seemed to be in the nature of the metatarsal covering, this species could be easily lumped in with the other varied forms classed under *Charadrius*. The knowledge that close examination caused separation of such heterogeneous aggregations into many narrow but natural groups and led the way to a later phylogenetic classification, induced the criticism of every species. In this case it has unearthed the lumping of this form among the Plovers and caused its transference to the present suborder. Details will be fully given under the genus-name later.

A short review of the genera will to some extent explain the peculiarities of the assemblage grouped in this family.

The genus *Cursorius* has a comparatively long bill, short wings, long legs, small feet, no hind toe, middle claw pectinated on its inner edge, tail short and square. The depression in the bill is less than half the length of the culmen,

GLAREOLIDÆ.

the nostrils placed in its anterior portion, parallel to the outer edge of the mandible, which is angularly placed with relation to the culmen-ridge; the anterior half of the culmen is long and decurved; the under-mandible is straight, with the tip decurved and showing no gonydeal angle.

Rhinoptilus is used for Coursers agreeing in most details with *Cursorius*, but are slighter-built birds with less-powerful bills which show a much less decurved tip, and a gonydeal angle is becoming apparent. In the genotype the middle claw is scarcely, often not at all, pectinate.

Stiltia is somewhat of a connecting link between the Coursers and Pratincoles. It has the long legs of the former but the short bill of the latter, with very long wings like the latter, but a short tail. The bill is short, very broad at the base, the tip slightly decurved and sharp; the claw on the middle toe very long, but not at all pectinated. Strangely, Sharpe in the *Catalogue of the Birds in the British Museum*, Vol. XXIV., p. 27, classes *Stiltia* under his section "Mid-claw pectinated along its inner margin," but I can see no pectination whatever.

Glareola has the exposed bill very short, the depression and culmen-ridge covered with feathers, so that only the nostrils are exposed; the tip is very decurved and no gonydeal angle present; the wings are very long and the tail is long and very deeply forked; the legs are short, and the toes and claws comparatively long, and a hind toe is present: the middle claw abnormally long and much pectinated. In the *Catalogue of the Birds in the British Museum* a number of species are classed under the generic name *Galactochrysea*. The correct spelling is *Galachrysia* (Bonaparte, *Comptes Rendus Sci.* (Paris), Vol. XLIII., p. 419, 1856), introduced for *lactea* and *cinerea*. These species are miniatures of *Glareola*, with a short, forked tail and form quite a distinct little group. With these, however, Sharpe associated *Glareola ocularis* Verreaux (*S. Afr. Quart. Journ.*, Vol. II., p. 80, 1833), but this species is a typical *Glareola* in size, coloration, and detail, save that it lacks the long, deeply-forked tail, having a short, slightly forked one. I would separate it as a new genus under the name *SUBGLAREOLA*, with *G. ocularis* Verreaux as type.

An examination of the eggs of the species of this family in the British Museum, gives some interesting results which seem worthy of record. *Cursorius* lays an egg which is quite unlike that of *Glareola*, the former light-coloured, covered with light spots and scratchings, the latter darker coloured with bold black blotches. *Rhinoptilus* eggs agree with those of *Glareola*, though the bird is nearly related to *Cursorius*. *Stiltia* lays eggs which agree with those of *Cursorius*, though the bird has a greater resemblance to *Glareola*, but the long legs show its affinity is clearly with *Cursorius*. It will be

THE BIRDS OF AUSTRALIA.

noted that the eggs in this case confirm the criticism of the bird's character.

The eggs of *Galachrysis lactea* and *cinerea* are distinctive, somewhat resembling those of *Cursorius*, but the eggs of *Glareola ocularis* are typically those of *Glareola*, showing this bird to be very closely allied to that genus, and to have little relation to the species of *Galachrysis*.

The two species hitherto representing this family in Australia are *Stiltia isabella*, the aberrant Courser resembling a Pratincole, and *Glareola pratincola maldivarum*, a winter-visitor. The transference of *Eudromius australis* Gould to this family adds another breeding form, and here again a most aberrant Courser is seen to inhabit the interior of Australia. This peculiar endemism of aberrant forms of this Order breeding in Australia has not hitherto been fully noted, through the lumping of generic forms: the acceptance of genera of very narrow limits lays bare these most interesting avian forms.

GENUS—STILTIA.

STILTIA Gray, Cat. Gen. Subgen. Birds, p. 111, 1855 Type *S. isabella*.

Rhimphalea Heine, Nomencl. Mus. Hein., p. 338, 1890 Type *S. isabella*.

GLAREOLINE birds with short bills, very long wings, short tail, and long legs and small feet.

The bill is short, very broad at the base, tip decurved and sharp; the lower mandible straight, gonydeal angle a little marked, but tip slightly decurved. The wings are very long and pointed, the first primary somewhat attenuated and exceeding the second by nearly an inch. The tail is short and slightly emarginate, only about a third, or less, the length of the wing. The legs are long, the metatarsus is regularly scutellate, both before and behind; the toes comparatively long and slender, the claws very long, the middle claw not at all pectinated; hind toe present. The combination of short glareoline bill, very long attenuate, wings, short tail and long cursorine legs, make this genus distinctive and unmistakable, while, as the genus is monotypic, no confusion is possible regarding the specific name; it was named thrice within five years by writers working independently, since when it has received no further attention.

STILTIA ISABELLA.

AUSTRALIAN PRATINCOLE.

(PLATE 170.)

GLAREOLA ISABELLA Vieillot, Analyse nouv. Ornith., p. 69, 1816; Australia.*Glareola isabella* Vieillot, Analyse nouv. Ornith., p. 69, 1816; *id.*, Galer. des Ois., Vol. II., p. 159, pl. 263, 1825.*Glareola grallaria* Temminck, Manuel d'Orn., Vol. II., p. 503, 1820 (South Asia); Gould, Birds Austr., Vol. VI., pl. 22, 1846; *id.*, Handb. Birds Austr., Vol. II., p. 243, 1865; Diggles, Handb. Birds Austr., Vol. II., pl. 98, 1877; Ramsay, Proc. Linn. Soc. N.S.W., Vol. II., p. 198, 1878; Ramsay, Proc. Linn. Soc. N.S.W., Vol. VII., p. 410, 1883; Bennett, *ib.*, Vol. X., p. 168, 1885; Seebohm, Geogr. Distr. Charadr., p. 263, 1887; Ramsay, Tab. List Austr. Birds, p. 20, 1888; North, Austr. Mus. Cat., no. 12, p. 308, 1889; Legge, Proc. Austr. Assoc. Adv. Sci., Vol. IV., p. 980, 1892; Campbell, *ib.*, Vol. V., p. 438, 1893; Buller, Trans. New Zeal. Inst. 1898, Vol. XXXI., p. 23, 1899.*Glareola australis* Leach, Trans. Linn. Soc. (Lond.), Vol. XIII., p. 132, 1820 (Australia).*Glareola isabellina* Lesson, Compl. Buff., Ois., p. 665, 1838.*Stiltia grallaria* Bonaparte, Comptes Rendus Sci. (Paris), Vol. XLIII., p. 419, 1856.*Stiltia isabella* Salvadori, Ann. Mus. Civ. Gen., Vol. XVIII., p. 322, 1882; *id.*, Ornith. Papua. e Moll., Vol. III., p. 286, 1882; Sharpe, Cat. Birds Brit. Mus., Vol. XXIV., p. 51, 1896; Hall, Key Birds Austr., p. 79, 1899; Campbell, Nests and Eggs Austr. Birds, p. 769, 1901; Hall, Emu, Vol. II., p. 64, 1902; Berney, *ib.*, p. 212, 1903; Hall, *ib.*, Vol. III., p. 43, 1903; Berney, *ib.*, Vol. IV., p. 46, 1904; Hartert, Nov. Zool., Vol. XII., p. 202, 1905; Hall, Key Birds Austr., p. 79, 1906; Berney, Emu, Vol. VI., p. 110, 1907; Ingram, Ibis 1907, p. 394; Mathews, Handl. Birds Austral., p. 29, 1908; *id.*, Nov. Zool., Vol. XVIII., p. 224, 1912; *id.*, List Birds Austr., p. 74, 1913.*Rhimphalea isabella* Heine, Nomencl. Mus. Hein., p. 338, 1890.

DISTRIBUTION. Australia (and islands to the North-west).

Adult male. Pale olive-brown on the head, back, scapulars, and wings: all the feathers margined with rufous except on the rump; hind-neck, fore-neck, and breast rufous; bastard-wing, primary-coverts and quills blackish, the short innermost

J G Keulemans, del

Winerby & Co

$\frac{3}{5}$
STILTIA ISABELLA
(*PRA TINCOLE*)



AUSTRALIAN PRATINCOLE.

primaries pale brown and edged with white on the inner webs, the shaft of the outer primary conspicuously white, secondaries uniform olive-brown; upper tail-coverts white; base of tail and outer pair of tail-feathers also white with a broad subterminal black band, which becomes much narrower on the outer feathers, tipped with brown on the outer webs and white on the inner ones; lores blackish; throat inclining to white; flanks and abdomen maroon-chestnut; vent and under tail-coverts white; axillaries and under wing-coverts black; bill, base scarlet, tip black; iris and feet brown. Total length 210 mm.; culmen 15, wing 198, tail 60, tarsus 50.

Adult female. Similar to the adult male.

Immature. Have very broad reddish-buff edges to the feathers of the upper-surface, giving it a uniform appearance.

Nest. A depression in the soil.

Eggs. Clutch, two; ground-colour pale stone, marked all over (sometimes very heavily) with irregular-shaped markings of dark brown and underlying ones of grey; axis 32-33 mm., diameter 23.5 to 24.5.

Breeding-season. September to February.

MR. J. P. ROGERS found these birds near Wyndham, in North-west Australia. They were fairly plentiful during the wet season (December, January, and February); in March they left the district. The same man also collected it on Melville Island in May 1912, and in Van Diemen Gulf in September.

Mr. Edwin Ashby tells me he received a specimen in the flesh from Lake Frome, South Australia, in September, 1909. And that about twenty years ago large numbers came down to the Adelaide Plains.

"This somewhat singular bird is one of the few migratory species that visit this part of the colony [interior of New South Wales] and remain during the intense heat of summer. As a rule it arrives towards the end of September and departs about the end of February. During that interval it breeds, and the place chosen for this purpose, and in fact its habitat during its stay, are the bare patches of ground, entirely destitute of vegetation, so frequent on the plains here. Some of these bare patches are of considerable extent, and the surface of the ground is broken up into countless small pieces from the size of a pea to that of a walnut, giving the appearance of having been chipped over with a hoe. This is partly due to the nature of the soil and to the intense heat and dryness of the climate which causes the surface to crack in all directions and become quite loose. It is on these loose patches that the *Glareola* deposits its eggs, two in number. It makes no nest but simply lays its eggs on the bare surface of the loose broken ground, as so much do they assimilate in form and colour to the surrounding lumps of earth, that unless the bird is seen to move off them a person might walk on them and not observe them, and on several occasions I have taken my eyes off the spot for a few seconds and then had considerable difficulty in distinguishing the eggs again.

THE BIRDS OF AUSTRALIA.

“As a rule the eggs are laid in October, but this year, 1884, for the first time, I obtained them in September. Usually it is very shy, but during the period of incubation it loses this shyness and both parent birds will allow themselves to be approached quite closely and seem utterly regardless of danger in their anxiety to protect their eggs or young. In fact I have seen the female bird so loth to quit the eggs that it was only when I touched her with my hand that she would quit the nest, pecking savagely at my hand several times before she did so; the male bird in the meantime laying flat on the ground with outstretched wings, a few feet off, uttering the most plaintive cries.

“The young in the earlier stages are exceedingly helpless, and although the colour of their down so closely resembles that of the loose pieces of earth amongst which they were hatched that when motionless they are undistinguishable, still their slightest movements would possibly attract the eye of some passing hawk or crow, and to guard against this danger the old birds conduct them as speedily as possible to one of the numerous holes in the ground to be found all over the plains (the mouth of some deserted burrow is a favourite place); into this hole the young are led and here they remain until they are able to fly. When the young are concealed in one of these holes one or both of the old birds may always be seen close by, and on the approach of danger I have frequently seen both take refuge in the hole, and, on watching for a short time, have seen one or both come cautiously out again only to disappear once more on noticing me. The bird is the only living creature I know of that seem to revel in the intense heat of mid-summer in this locality, for when every other living animal has sought shelter from the withering mid-day sun, it may be observed running briskly about on the bare red patches I have described when the surface of the ground is so hot that a man could scarcely bear his hand on it; in fact the hotter the day the more this feathered salamander seems to enjoy it. It, however, requires a good deal of water, for it drinks several times during the day and often travels many miles going to and returning from the tanks containing water, and numbers can be obtained by waiting at the water until they come to drink.

“These birds run with great rapidity when in quest of food, etc., and suddenly pausing, the body undulates for some seconds as if poised on delicate springs when the running is again resumed. Its flight, which appears somewhat laboured from the extreme length of the wing, is nevertheless light and buoyant and is characterised by the same erratic zig-zag motions so noticeable in the *Eurostopodidæ*. Its food consists of insects which are captured both on the ground and on the wing, the bird sometimes running along the

AUSTRALIAN PRATINCOLE.

ground in pursuit, and springing up to a height of a foot or more as the insect rises, occasionally towering to a considerable altitude as some flying insect attracts its attention, returning to the ground in the skimming zig-zag manner before described.”*

“The home of the Australian Pratincole is the interior of New South Wales and the northern portion of the Province of South Australia . . . Mr. E. G. Vickery has kindly permitted me to describe an egg from his collection, taken near Wilcania on the Darling River in September 1880. He informs me that the parent bird was seen to fly from the eggs, and before they were taken, to return again and sit on the nest, so I think there can be little doubt of their authenticity.

“The eggs were three in number, the ground colour is of a creamy-white, dull light stone-brown, or light buff, well covered with irregularly shaped blotches, dots, and spots, and speckles of dull umber and sienna brown, with a few dots and dashes almost black, and obsolete spots here and there of slaty-grey; length 1.3 in. by 1 in.; in shape they are slightly oval, slightly swollen at the thicker end, and not pointed . . . Mr. Bennett informs me that they select a bare spot on the ground where the earth or sand assimilate to the colour and markings of the eggs. They breed during October.”†

“Pratincoles, during the summer, are very numerous on the open downs about Hughenden and Richmond [North Queensland], where they nest. I have found youngsters in every stage of down and feather from the 10th November to 12th March. Their eggs, laid on the bare ground, are among the hardest to see that I know of; I have stood a few paces away from a nest containing two eggs, and having, without moving, taken my eyes off it for a moment, have found it very hard to locate again. Often when driving sheep have I watched the desperate efforts of a mother bird to beat off some particular spot, the advancing host of ‘woollies,’ throwing herself with outspread wings in the faces of the wondering sheep. Poor little *isabella*! It would indeed be a hard heart that would not go to your assistance; and as I ride away I am amply repaid by the way she runs, breathless but contented, little short runs, each ending in a tip up and down, round two or three pieces of broken stone, against which squat her two little mottled chicks. Though generally feeding on the ground, I have noticed them at times wheeling in the air, now just clear of the vegetation, and again as high as a house, in company with their Oriental cousin and white-rumped Swifts (*Cypselus pacificus*), catching something, but I could not see what. They often fly and call during moonlight nights. They leave us at

* Bennett, *Proc. Linn. Soc. N.S.W.*, Vol. X., p. 168, 1885.

† Ramsay, *ib.*, Vol. VII., p. 410, 1883.

THE BIRDS OF AUSTRALIA.

the end of April, but it is no uncommon thing for a few individuals to remain right through the winter.”*

“Through the summer they are here in large numbers, but during the winter months they are practically absentees, being represented by only irregular visits of odd birds and small parties, which latter never remain any time. During the winter of 1902 they were, I think, quite absent. In April they leave us, returning again after middle of August. During the past two years I have found eggs or youngsters from December to February.”†

“During the summer *S. isabella* is here [Richmond District, North Queensland] in large numbers, but in April a big exodus of the dainty courser takes place, for which purpose the birds gather in large numbers; thence throughout the winter they are represented by the irregular visits of two or three individuals, while now and again a small invasion takes place, forty or fifty suddenly showing up, but they are birds of passage, and only remain a few hours. The date of their return to us varies one year with another. It usually takes place in September or October. This year, for some reason of which I cannot suggest any explanation, they are, as I write (12th November, 1906), practically total absentees, though the winter has been very mild and the season is one of abundance.

“A few very early nests may be found in September, and these I have no doubt belong to some of the old pairs of Pratincoles that have remained with us through the winter. The main nesting season does not commence till October or November, and lasts till February. Chicks in the down may be seen in March, but they will be hatched in the previous month. The latest date on which I have actually found eggs is 8th February. They make no nest, the eggs being laid on the bare ground without any excavation or depression, but the sitting bird relieves the monotony of its task by getting such fragments of dried vegetation as are within reach, and arranging them round the eggs. The eggs are very hard to find, and the little chicks in the down are still harder, for they not only have their protective colouring, but they are very smart in seeking shelter and making the most of it, on what is practically bare ground, tucking themselves away into the impression of a beast’s hoof made during the wet, or crouching close against a small lump of earth that is not as big as themselves; or again, should there be no refuse on the surface, they do not hesitate to go down the gaping cracks in the ground, with which the parched downs are reticulated.”‡

The bird figured and described is a male collected at Alexandra, Northern Territory, on December 10th, 1905, by the late William Stalker.

* Berney, *Emu*, Vol. II., p. 212, 1903.

† *id.*, *ib.*, Vol. IV., p. 46, 1904.

‡ *id.*, *ib.*, Vol. VI., p. 110, 1907.

GENUS—GLAREOLA.

GLAREOLA Brisson, Ornith., Vol. I., p. 48, 1760 ; Vol. V.,

p. 141, 1760 Type *G. pratincola*.

Trachelia Scopoli, Annus I., Hist. Nat., p. 110, 1769 .. Type *G. pratincola*.

Pratincola Schrenck, Fauna Boica, Vol. I., p. 209, 1798 Type *G. pratincola*.

Dromochelidon Landbeck, Jahrsbh. ver. Nat. Wurt. 1846,

p. 228 Type *G. pratincola*.

GLAREOLINE birds with very short bills, long wings, long tail and short legs with rather long toes. The bill is very short; the feathering of the fore-head extends on the culmen, so that the depression in which the nostrils lay is covered save the portion showing the nostrils; it is broad at its base and the tip decurved: comparatively like a miniature of that of *Stillia* with the greater portion covered with feathers; the lower mandible is practically without a marked gonys.

The wings are very long and pointed with the first primary longest, but not attenuate and lengthened as in *Stiltia*. Tail long and very deeply forked: the outer-tail feathers measuring almost half the length of the wing. The legs are short; the metatarsus is regularly scutellate in front and behind; the toes are long and the outer one connected with the middle one by a web, the inner disconnected; middle claw extraordinarily long and pectinated; hind toe present.

GLAREOLA PRATINCOLA MALDIVARUM.

ORIENTAL PRATINCOLE.

(PLATE 171.)*

GLAREOLA (PRATINCOLA) MALDIVARUM Latham and Davies, Faun. Indica, p. 11, 1795 ;
Maldive Islands.

Maldivian Pratincole Latham, Gen. Synops., Vol. III., pt. I., p. 224, 1785.

Coromandel Pratincole *id.*, *ib.*

Madras Pratincole *id.*, *ib.*

Glareola (Pratincola) maldivarum Latham and Davies, Faun. Indica, p. 11, 1795.

Glareola (Pratincola) coromanda id., *ib.* (Coromandel Coast).

Glareola (Pratincola) madraspatana id., *ib.* (Madras).

Glareola orientalis Leach, Trans. Linn. Soc. (Lond.), Vol. XIII., p. 132, 1820 (Java) ;
Gould, Birds Austr., Vol. VI., p. 23, 1848 ; Swinhoe, Ibis 1861, p. 342 ; Gould,
Handb. Birds Austr., Vol. II., p. 245, 1865 ; Blyth, Ibis 1867, p. 163 ; Sharpe,
ib. 1876, p. 51 ; Ramsay, *ib.* 1877, p. 469 ; Diggles, Handb. Birds Austr., Vol. II.,
pl. xcvi., 1877 ; Ramsay, Proc. Linn Soc. N.S.W., Vol. II., p. 198, 1878 ;
Salvadori, Ornith. Papua. e Moll., Vol. III., p. 284, 1882 ; Kelham, Ibis 1882, p. 6 ;
Seebohm, Geogr. Distr. Charadr., p. 258, 1887 ; Ramsay, Tab. List Austr. Birds,
p. 20, 1888 ; Styan, Ibis 1891, p. 503 ; La Touche, *ib.* 1892, p. 495 ; Legge, Proc.
Austr. Assoc. Adv. Sci., Vol. IV., p. 981, 1892 ; Sharpe, Cat. Birds Brit. Mus.,
Vol. XXIV., p. 58, 1896 ; Keartland, Proc. Roy. Soc. South Austr., Vol. XXII.,
p. 160, 1898 ; North, Birds County Cumberl., p. 109, 1898 ; Hall, Key Birds
Austr., p. 79, 1899 ; Campbell, Nests and Eggs Austr. Birds, p. 771, 1901 ; Hall,
Emu, Vol. II., p. 64, 1902 ; Berney, *ib.*, p. 213, 1903 ; Carter, *ib.*, Vol. III., p. 175,
1904 ; Berney, *ib.*, Vol. IV., p. 46, 1904 ; Hall, Key Birds Austr., p. 79, 1906 ;
Berney, Emu, Vol. VI., p. 111, 1907 ; Ingram, Ibis 1907, p. 394 ; Mathews,
Handl. Birds Austral., p. 29, 1908 ; *id.*, Emu, Vol. IX., p. 56, 1907 ; *id.*, *ib.*,
Vol. X., p. 104, 1910.

Glareola torquata Jerdon, Madras Journ. Litt. Sci., Vol. XII., p. 216, 1840.

Glareola pratincola (not Linné) Radde, Reisen Suden von Ost-Sibir., p. 307 (301), 1863.

Trachelia pratincola maldivarum Mathews, Nov. Zool., Vol. XVIII., p. 225, 1912.

Glareola pratincola maldivarum Mathews, List Birds Austr., p. 74, 1913.

* The Plate is lettered *Trachelia maldivarum*.



J G Keulemans. del

Witherby & Co.

$\frac{5}{2}$
TRACHELLA MALDIVARUM.
(ORIENTAL PRATINCOLE).

ORIENTAL PRATINCOLE.

DISTRIBUTION. Siberia (breeding), southward to Australia (except the South-west).

Adult male. General colour of the upper-parts olive-brown, somewhat darker on the head, and a slight shade of rufous on the hind-neck; bastard-wing, primary-coverts, primary- and secondary-quills dark brown; upper tail-coverts pure white; tail also white with dark brown tips to the feathers; loreal space black, which colour is continued in a narrow line below the eye on to the sides of the throat and joining on the fore-neck, encircling the buff colour on the throat: these black feathers have white bases; the patch on the side of the breast olive-brown like the back; middle of fore-neck and breast rufous becoming paler on the flanks; abdomen and under tail-coverts pure white; axillaries and inner under wing-coverts chestnut, marginal and greater under wing-coverts black, more or less tipped with white, bill black, basal half of tomium and corner of mouth red; iris dark brown; tarsi and feet blackish-brown. Total length 227 mm; culmen 16, wing 191, tail 82, tarsus 34.

Adult female. Similar to the adult male, but differs by the absence of the black lores, which are more or less rufous.

Immature male (of the year). Differs from the adult only in being paler on the throat (which is streaked) and breast, and by the absence of the white bases to the feathers which encircle the buff throat-patch.

Immature female. Differs from the immature male in being almost white on the throat, and the entire absence of rufous on the fore-neck.

Young. Differs from the adult chiefly in having white margins to the feathers on the upper-surface; the upper-breast is brown, with lighter margins to the feathers, and the throat has white feathers with narrow brown centres. As the bird gets older, the margins to the feathers of the upper-surface become narrower, the feathers approaching those of the fully adult in colour, and the black rim surrounding the throat becomes pronounced.

Nest. A depression in the soil.

Eggs. Clutch, two; ground-colour pale stone, marked all over with bold markings of dark purplish-black, and underlying ones of smoky-grey; axis 31 mm., diameter 24.

Breeding-season. April; May.

MR. J. P. ROGERS, writing from the North-west of Australia, says: "To-day, 10th February, 1909, I rode over a big plain on which a lot of these birds were feeding; about a dozen of them followed me and caught the grasshoppers that were disturbed by my horse; the insects were all caught and eaten on the wing. These birds usually choose a piece of bare ground to alight on and stand motionless on it. I have never seen them feeding on the ground; apparently these birds always catch their food when flying. They are very late feeders, as I have seen them hawking for grasshoppers when it was too dark to shoot and the birds themselves could barely be distinguished. They arrived near Wyndham in January and remained till April, when they all left. On 20th March, 1911, the only one seen was collected on a grassy flat."

Mr. Tom Carter noted that these birds were rarely observed in the Mid-west, and then only when very stormy or unsettled weather was about. The natives call these birds "Rain brother."

THE BIRDS OF AUSTRALIA.

The following are dates of occurrence about Point Cloates :—

19th January, 1900 : One shot on the beach after heavy North-east gale.

9th to 12th February, 1900 : Several flocks seen. Strong North-east winds.

18th April, 1900 : Large flocks at the flooded white gum flat 25 miles inland from Point Cloates ; weather unsettled with floods of rain.

6th December, 1900 : Two were seen on a salt-marsh.

“The appearance of this bird is regarded by residents of North-west Australia as an indication of the approach of rain, and it is locally known as the ‘Little Storm bird.’ During January I noticed a flight of strange birds, which afterwards proved to be this Pratincole, and about a quarter of a mile from the telegraph station. I ran for my gun, but was surprised to see the birds rising from the ground like a continuous column of smoke and circling overhead until they spread out so as to almost obscure the sky. I was within one hundred yards of them when the last bird left the ground. After soaring and rising in the air they disappeared in a southerly direction. For about a month afterwards they were seen in large flocks nearly every day coming from the West, and later in the evening returning in that direction. They came in a similar manner to a flight of Swifts, scattered over a wide area and circling or darting along in pursuit of insects. Those shot had their gullets filled with beetles and grasshoppers. Owing to their tender skin I found it difficult to obtain specimens. Although a number was shot, those which fell any distance were ruined by striking the ground, as the concussion invariably knocked off large pieces of skin. The examples secured were shot whilst skimming over a swamp, from which they were retrieved by a little black urchin about eight years old. The natives were very indignant at my shooting these birds, and a deputation from the blacks’ camp explained for my edification that if I killed any more a big rain would come and never stop until it had washed everything away.”*

“Never saw this species anywhere but at Clare Valley, Richmond [North Queensland]. Here in 1899 they arrived on 30th December, and remained till early in March, being all gone by the middle of the month ; between these dates they were fairly common, always in company with *Stiltia isabella*. During the following summer I was away, but in 1901 they showed up again in their old haunts on the 16th December ; this time they only remained a few days.”†

“In the summer of 1902-3 the Oriental Pratincole was seemingly behind time, the first occasion I saw it being 2nd January, and I saw none after the

* Kearnland, *Proc. Roy. Soc. S. Austr.*, Vol. XXII., p. 160, 1898.

† Berney, *Emu*, Vol. II., p. 213, 1903.

ORIENTAL PRATINCOLE.

middle of February [North Queensland]. In the spring of 1903-4 summer they arrived on 5th November, and for a few weeks following were here in large numbers.”*

“As far as concerns this particular district, it is a most uncertain and irregular migrant and therefore a most unsatisfactory bird to observe [in North Queensland]. It is usually a late arrival, seldom putting in an appearance before the middle of December, though in 1903 it showed up in some numbers on 5th November. They do not remain long with us; the latest date that I have seen them is 14th February 1903—the same year as above, be it noted, but a different season. Some years they do not show up at all, and others we get a call from the spring wave going South, but see nothing of them on their return journey.”†

Swinhoe (*l.c.*) says they are common about the marshes near Takoo, where they most certainly breed. Blyth (*l.c.*) records it breeding sometimes in the neighbourhood of Calcutta.

“Towards the end of April, in both years that I was on the frontier of British Burma, these Pratincolas came into Tonghoo in large numbers for a few days on their way northwards. They might be seen every evening at dark hawking after insects among the houses on the river bank.”‡

“The Swallow Plover is very common during the season of migration, arriving at the same time as the Golden Plover, *Charadrius fulvus*, but I never met with it at other times of the year. During March, and again in September and October, great numbers pass over the island of Singapore; but they are then so tame that it is poor sport shooting them. Often they squatted so closely that I walked within a few yards before they would rise; then they frequently settled again after flying a short distance. Perhaps this extraordinary tameness was owing to the fatigue occasioned by migrating. I noticed that they were generally found in large flocks on cultivated ground, and were particularly fond of ploughed land, more especially if it were on a hillside.”§

“Very large flocks pass through [the Lower Yangtse Basin] in April and May, and return again in August and September. A few stray birds may be met with in winter.”||

“Passes Foochow in April and May. Obtained also during the autumn migration on the 19th of August, the 2nd of September, and in October. It is not a common migrant.”¶

* Berney, *Emu*, Vol. IV., p. 46, 1904.

† *id.*, *ib.*, Vol. VI., p. 111, 1907.

‡ Wardlaw Ramsay, *Ibis* 1877, p. 469.

§ Kelham, *Ibis* 1882, p. 6.

|| Styan, *ib.* 1891, p. 503.

¶ La Touche, *ib.* 1892, p. 495.

THE BIRDS OF AUSTRALIA.

Radde (*l.c.*) says: "On my expedition in May, 1855, I last observed them on the Barabinsk Steppe. On July 9th, 1856, I found several pairs busy nesting on the salt-marshes about 20 versts east of Abagaitui near the mouth of the Urtuisk."

This bird is only a winter-visitor to Australia, breeding in Siberia. It has been long known under Leach's name of *Glareola orientalis*, given in 1820, but it was described by Latham in the *General Synopsis of Birds*, Vol. III., pt. I., p. 224, 1785, three times over, as varieties of the Austrian Pratincole: First as var. B, *Maldivian Pratincole*; open sea near Maldivia Islands, then var. C, *Coromandel Pratincole*; on the coast of Coromandel, and var. D, *Madras Pratincole*; about Madras and other parts on the coast of Coromandel.

These descriptions refer to various states of plumage of the same bird.

In 1795, ten years afterward, when Latham and Davies prepared a *Faunula Indica*, they gave Latin names to these three varieties, as noted in the synonymy.

I believe Dr. C. W. Richmond was the first to draw attention to these names (*Proc. U.S. Nat. Mus.*, Vol. XXXV., p. 635 (footnote), 1908) as being equivalent to and antedating *Glareola orientalis*, though Sherborn had recorded them in his invaluable *Index Animalium*, published in 1902. I at once adopted the earliest one in 1911, when it was first brought to my notice.

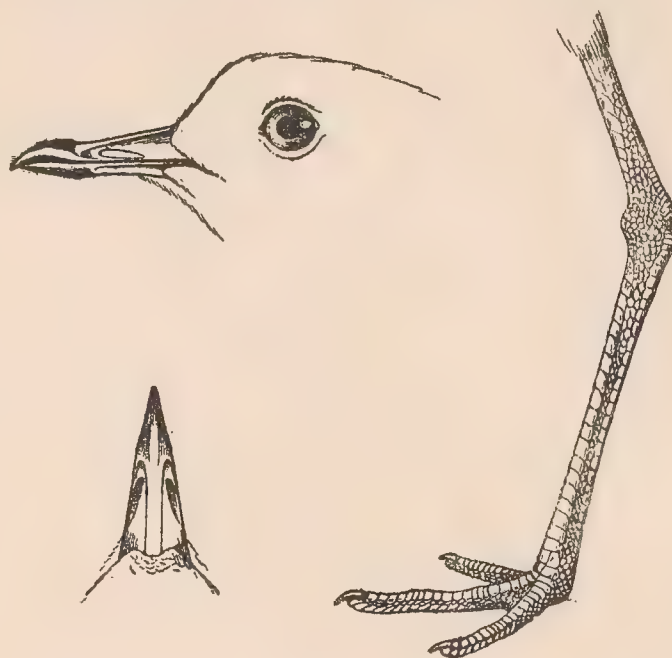
The bird figured and described is a male, collected on Parry's Creek, North-west Australia, on the 23rd January, 1909, by Mr. J. P. Rogers.

GENUS—PELTOHYAS.

PELTOHYAS Sharpe, Cat. Birds Brit. Mus., Vol. XXIV.,

p. 307, 1896 Type *P. australis*.

GLAREOLINE birds with rather long bills, short wings, short tail, and long legs with small feet. The bill is long, with the tip very little decurved; the depression in which the nostrils lay extends more than half the length of the bill; the nostrils are linear and placed at the anterior end of this depression; lower mandible is straight, with the gonydal angle little marked, but more so than in most other genera of this family. To show the nature of the bill and the position of the nostrils I attach carefully-made drawings of the bill from the side and from above, and also a drawing of the leg, showing its typical cursorine character.



The wings are short, with the first primary longest. The tail is short and rounded, less than half the length of the wing. The legs are long; the metatarsus is regularly scutellate before and behind; the toes are short, and the middle claw is not pectinate. There is no hind toe.

The history of this genus is very peculiar. The bird was first described by Gould, who allotted it to *Eudromias*, on account of its vague resemblance to the European bird. He remarked that it was a beautiful representative of the European bird in Australia, ignoring the fact that the former was a dweller of the subarctic mountain-tops, the latter a resident of desert plains. No one seems to have doubted this extraordinary location until 1896, when Sharpe, monographing the *Charadriiformes* in the British Museum, noted the peculiar metatarsal covering, and thereupon introduced for it alone the new genus *Peltohyas*, and further allotted to it a new subfamily *Peltohyatinae*. In 1912 I included it in the genus *Charadrius*, using that name in its widest significance and minimising the differences observed. In doing this I was in company with Seebohm, who had previously so placed it.

THE BIRDS OF AUSTRALIA.

Working systematically at the Charadriine birds the peculiar metatarsal covering of this species soon emphasised itself, and carefully examining the bill, the distinct nature of the nostrils at once revealed the relationship of the species.

Seebohm's remarks on this group are worthy of quotation in this respect (*Geog. Distr. Charad.*, p. 231, 1887): "The Coursers form a group of birds which are intermediate between the Pratincoles and the Lapwings, and are probably almost as closely allied to the Bustards and Stone Curlews on the one hand, and to the Plovers on the other. The Lapwings and Plovers, like the Sandpipers, Snipes, and most other birds belonging to the family, have the nasal orifice placed in a groove or ditch which extends for some distance beyond it; but in *Otis*, *Cursorius* and *Pratincola* there is no nasal groove, the nasal orifice being placed in a depression not more elongated than itself. From *Otis*, *Cursorius* may be distinguished by its *scutellated tarsus*, and from *Pratincola* by its having *neither a forked tail nor a hind toe*."

Seebohm did not, however, notice the affinity of the present species with *Cursorius*, though he wrote (*l.c.*, p. 110): "It is difficult to say which it most resembles, *Charadrius hiaticula*, *Charadrius morinellus*, or *Cursorius bicinctus*, but its resemblance to the latter is probably an example of analogy rather than of affinity." The bill-characters, combined with those of the legs, absolutely prove its relationship is with the Coursers, though the lengthened bill and somewhat short legs make it look unlike.

The middle claw shows no pectination on its inner margin, but neither does that of *Stiltia*, an admitted genus of this family, and the pectination is obsolete or missing in *Rhinoptilus*, another typical genus.

PELTOHYAS AUSTRALIS AUSTRALIS.

EASTERN DOTTEREL.

EUDROMIUS AUSTRALIS Gould, Proc. Zool. Soc. (Lond.) 1840, p. 174, 1841; South Australia.

Eudromius australis Gould, Proc. Zool. Soc. (Lond.) 1840, p. 174, 1841.

Eudromias australis id., Birds Austr., Vol. VI., pl. 15, 1843; Sturt, Narr. Exp. Centr. Austr., Vol. II., App., p. 49, 1849; Gould, Handb. Birds Austr., Vol. II., p. 227, 1865; Diggles, Comp. Gould's Handb., Vol. II., pl. 97, 1877; Ramsay, Proc. Linn. Soc. N.S.W., Vol. II., p. 197, 1878; *id.*, Vol. VII., p. 410, 1883; *id.*, Tab. List Austr. Birds, p. 19, 1888; North, Austr. Mus. Cat., no. 12, pp. 303, 395, 1889-1890; Legge, Proc. Austr. Assoc. Adv. Sci., Vol. IV., p. 970, 1892; Campbell, *ib.*, Vol. V., p. 431, 1893; Kewartland, Rep. Horn Sci. Exp., Zool., pt. II., p. 110, 1896.

Charadrius australis Gray, Genera Birds, Vol. III., App., p. 25, 1849; Seebohm, Geogr. Distrib. Charadr., p. 110, 1887.

Morinellus australis Bonaparte, Comptes Rendus Sci. (Paris), Vol. XLIII., p. 417, 1856.

Peltohyas australis Sharpe, Cat. Birds Brit. Mus., Vol. XXIV., p. 307, 1896; Hall, Key Birds Austr., p. 83, 1899; Campbell, Nests and Eggs Austr. Birds, p. 798, 1901; Berney, Emu, Vol. II., p. 212, 1903; *id.*, *ib.*, Vol. IV., p. 47, 1904; Hall, Key Birds Austr., p. 83, 1906; Berney, Emu, Vol. VI., p. 112, 1907; Mathews, Handl. Birds Austral., p. 25, 1908.

Charadrius australis australis Mathews, Nov. Zool., Vol. XVIII., p. 218, 1912.

Peltohyas australis australis Mathews, List Birds Austr., p. 75, 1913.

DISTRIBUTION. Queensland; New South Wales; Victoria; South Australia.

Adult differs from the adult of *Peltohyas australis whitlocki* in being smaller and paler.

Nest. A depression in the soil.

Eggs. "Clutch three to five. Ground colour is of a rich cream or buff, sparingly sprinkled all over with irregular spots and some elongated crooked markings of chocolate black with a few minute dots and dashes of a lighter tint: the markings look black in certain lights, but of a chocolate tint in others. Axis 37 mm.; diameter 27." (Ramsay.)

Breeding-months. April, May, September, and October (Bennett); August (Campbell).

MR. J. W. MELLOR, writing from South Australia, says: "I was pleased to meet this interior bird out in the wilds of the Never-never, and in country that harmonised with its general coloration, the ground generally being of a buffy-reddish clay nature, or reddish sand, and the stones and pebbles about which the birds ran were of the same uniform color, and even the stunted

THE BIRDS OF AUSTRALIA.

salt bush, etc., had taken on the reddish-ochre tinge. These localities were invariably on the tablelands and destitute of any large bushes or vegetation above six inches to a foot in height, and sparsely placed at that. The bird, when observed, would run slowly away along the ground, without the slightest noise, and then squat motionless amongst the stones, etc., where it could hardly be detected, except by an expert eye, and I would get right upon it sometimes before the bird would move off to repeat the performance at no great distance, but they seldom took to the wing unless forced to do so."

The type of this species was collected by Captain Sturt in South Australia. He says it made its appearance in 1841 suddenly on the plains of Adelaide.

"26th April, 1889: Found to-day a nest of *Eudromias australis* containing three eggs; this is unusually early, for hitherto I have never known this bird to breed before September or October. The eggs were placed on a small natural mound of earth some four or five inches in diameter and about the same height above the surrounding ground, and were completely covered with small dried sticks some two or three inches in length. I disturbed the bird from the nest on which she was sitting and noticing only the sticks, I at first thought that in consequence of the ground all round being covered in water to the depth of two or three inches—the result of recent heavy rains—that the bird in this particular instance had departed from the usual custom, and had constructed a kind of nest, and that she had not yet deposited her eggs, but on closer examination I found the eggs on the bare ground, and that the sticks had been placed carefully over them as a safeguard from the keen-eyed crow, as whenever the old bird should leave her nest without this covering, situated as they were, they would have been very conspicuous, as the little mound in which they were placed was the only dry spot for fifty or sixty yards round."*

"I have only come across this Dottrel in four years out of the past seven [in Richmond District, Queensland] as follows: December, 1901; January and September, 1902; November, 1904; and January, March, and September, 1905. They are always on the high, dry downs, usually in small parties up to ten, sometimes only a single individual; on one occasion I flushed a mob of thirty-one birds."†

This bird has received no specific name since Gould described it, so that it has an absolutely clean synonymy.

The only subspecies yet described is the Western form, which I named in 1912.

* Bennett, *Austr. Mus. Cat.*, no. 12, p. 395, 1890

† Berney, *Emu*, Vol. VI., p. 112, 1907.



H Grönvold, del

W. & C.

¹⁹/₂₀
CHARADRIUS AUSTRALIS.
(DOTTEREL).

PELTOHYAS AUSTRALIS WHITLOCKI.

WESTERN DOTTEREL.

(PLATE 172.)*

CHARADRIUS AUSTRALIS WHITLOCKI Mathews, Nov. Zool., Vol. XVIII., p. 218, 1912 ;
West Australia.

Eudromias australis Kcartland, Trans. Roy. Soc. South Austr., Vol. XXII., p. 186, 1898.
Pelthoyas australis Carter, Emu, Vol. III., p. 176, 1904 ; Campbell, *ib.*, Vol. IX., p. 165,
1910 ; Whitlock, *ib.*, Vol. IX., p. 189, pl. ix., 1910.

Charadrius australis whitlocki Mathews, Nov. Zool., Vol. XVIII., p. 218, 1912.

Peltohyas australis whitlocki Mathews, List Birds Austr., p. 75, 1913.

DISTRIBUTION. West Australia.

Adult male. General colour of the upper-surface rufous and dark brown, the feathers being dark brown broadly margined with rufous, the dark pattern becoming paler on the lower-back, rump, and upper tail-coverts ; outer edge of wing rufous ; bastard-wing and primary-coverts dark brown tipped with rufous ; primary-quills black on the outer webs and at the tips, shaft of first or outer primary white, remainder reddish-brown, inner-webs rufous, some of the inner primaries rufous on the outer-webs ; secondaries brown with rufous margins ; tail dark brown, the feathers edged with sandy-rufous and white ; hinder-crown and nape like the back ; a broad black band across the top of the head which is continued in a narrow line backward over the eye on to the sides of the neck, where it joins a narrow collar on the hind-neck which is extended on the fore-neck and ends in a point on the middle of the breast ; a black patch from below the eye to the sides of the throat ; ear-coverts buff streaked with black ; a spot behind the eye, chin, and throat fawn-colour, somewhat darker on the lower-throat ; sides of breast and sides of body rich fawn-colour ; the feathers adjoining the black mark on the fore-neck much paler as also a spot below the ear-coverts ; middle of abdomen and flanks deep chestnut ; vent, thighs, and under tail-coverts white tinged with buff ; under wing-coverts and axillaries fawn-colour, rather paler than the sides of the body ; bill black, paler at base ; iris dark brown ; tarsi and feet drab-colour. Total length 221 mm. ; culmen 17, wing 142, tail 65, tarsus 34.

Adult female. Similar to the adult male.

Immature. Differs from the adult in having all the characters much more faintly indicated, except on the crown of the head where the black band of the adult is entirely absent.

Nest. A depression in the soil.

Eggs. Clutch, three ; ground-colour brown, with black markings.

Breeding-season. July (Carter) ; August (Whitlock).

* The Plate is lettered *Charadrius australis*.

THE BIRDS OF AUSTRALIA.

Mr. TOM CARTER writes : " Only once came under my observation and that was on July 8th, 1902, when I saw a pair of birds, new to me, while driving along the great open plains between Lyndon and Minilya Rivers in Mid-west Australia. I promptly left the buggy, and shot them, when they proved to be male and female, and were undoubtedly breeding near. However, a careful search failed to reveal the eggs, although I saw other birds close round me."

" At the first lagoon we passed on approaching the Fitzroy River [in North-west Australia] a number of these birds were seen running near the margin of the water. When alarmed, they rose quickly, their long pointed wings enabling them to travel a great distance in a very short time. Although on several occasions three or four birds were disturbed near together, each went off by itself, either on to the open plain or some other part of the lagoon. On our return along the course of the river to Derby they were frequently disturbed some distance from the water. They were never seen in flocks."*

" They were feeding among the samphires growing on the margin of an arm of the largest lagoon in Lake Violet [Mid-west Australia]. Four days later, and some two miles away, I came across a flock of quite twenty. Under the circumstances I felt quite justified in dissecting a single bird to ascertain as near as possible the probable date of their breeding. I judged I must wait fully three weeks before I could expect eggs. I determined, therefore, to keep watch, without disturbing them more than was absolutely necessary. On 19th August I was on the same samphire flat again, and after searching it carefully I saw a single bird running away to the left in a rather suspicious and suggestive manner. If I stood still she would halt too and watch me. On my moving to the point from which she appeared to have run, she tripped a little further away always keeping an eye on me. Feeling sure I was near the nest, I made a mark and commenced a systematic search round it. She halted on a little eminence and watched me silently. After a quarter of an hour's patient hunting, to my great delight, I caught sight of the three brown eggs half covered with flakes of sun-baked clay. Had they been entirely covered I might easily have missed them, so closely did they assimilate to the dark ferruginous soil on which they lay. The black markings on these eggs being small render them much less conspicuous than the more boldly marked eggs of other allied species. The nest was a very shallow depression probably scratched out by the parent bird, and had no lining of any kind whatever, the flakes of mud being probably added after the eggs were laid. Surrounding the nest were a few pieces of white quartz

* Kcartland, *Trans. Roy. Soc. South Austr.*, Vol. XXII., p. 186, 1898.

WESTERN DOTTEREL.

and nearly black ironstone: The only vegetation was a sparse growth of stunted samphire, the tallest sprays of which did not exceed six inches in height. After packing the eggs, I turned my attention to the female. She had not moved from her point of vantage. I walked towards her, and she ran for a few paces as before, but now she gave utterance to a low note resembling the syllable 'Kr-root,' the *r* being uttered in rather a guttural manner. There was no sign of the male bird . . . Much to my disappointment this was the only nest of these rare eggs I found. I visited the locality again and again, and often encountered the main flock, but, despite much searching, all was in vain. I can only surmise that, the species being resident, many pairs may breed during the summer rains, when insect life is so much more abundant in these interior regions . . . When feeding, a flock keeps in open order and one or other is constantly on the run. If approached carefully they are not timid, but if fired at usually fly away to some distance. Amongst the samphire this Dottrel is very inconspicuous, and looks grey rather than ferruginous in colour. This may be due to the glare, which is very trying to the eye until one is accustomed to it. In addition to the syllable 'Kr-root' before described, this bird has a sharper call, which can be heard at some distance; it resembles the word 'quick' uttered in a slightly metallic tone."*

The differences between the Eastern and Western birds were first noticed by A. J. Campbell (*l.c.*), who wrote: "Examples of *Peltohyas* (*Eudromias*) *australis* were smaller and of a richer red (buff) compared, say, with examples found in Riverina, N.S.W. Possibly Mr. Mathews, in his forthcoming work, will find it expedient to make *two* races of this interesting bird."

The type figured and described was collected at Day Dawn, West Australia, on May 19th, 1903.

* Whitlock, *Emu*, Vol. IX., p. 189, 1912.

FAMILY—BURHINIDÆ.

THE species of the Family *Burhinidæ*, commonly known as Thick-knees or Stone-Plovers, form a very distinct group, which Sharpe considered a suborder of the *Charadriiformes*. They agree with the Bustards, which also are grouped as a suborder, and differ from all the other suborders, in having the nasals holorhinal, not schizorhinal.

Four genera are now commonly recognised, and though they differ appreciably at sight, they have retained much similarity in coloration. Thus, though the legs, wings, tail, and bill vary in proportion in each genus, the birds are all grey, sandy, or sandy-rufous in general upper-coloration; but whereas *Burhinus* and *Ædicnemus* are somewhat heavily blotched with black above, and heavily streaked on the under-surface, *Orthorhamphus* and *Esacus* are comparatively uniform above, and only speckled lightly on the breast. All the species however have white throats with similar black face-markings, similar primary coloration, and similarly coloured under tail-coverts.

Ædicnemus has a heavy conical bill, the nasal groove extending about half way down the bill, the nostrils a long narrow slit placed at the anterior end of the groove: the tip is not straight nor upcurved, but not strongly decurved; wings short, the first primary longest; the tail long and wedge-shaped; the legs long and slender: the metatarsus reticulated throughout, tibia long and exposed; feet long, with no hind toe and no webbing between the toes.

Burhinus has generally developed into a larger bird, but the bill has not grown proportionately, and is therefore comparatively shorter. The wing has the second primary longest, the first and third being a little less and subequal.

Esacus is almost as large as *Burhinus*, but has a much longer, more massive bill, shorter tail, and stouter, rather shorter, legs and feet. The wing has the first, second, and third primaries longest and subequal.

Orthorhamphus agrees in general with *Esacus*, but has still stronger legs and feet and a differently shaped bill. The bill of *Esacus* is longer than the head, straight, but with an upward tendency, and much compressed; the nasal groove and nostrils are as in *Ædicnemus*. The bill of *Orthorhamphus*

BURHINIDÆ.

is much heavier, the culmen slightly decurved, not so much laterally compressed, and much deeper. Cuts showing the nature of these two bills will be given in connection with the latter genus.

The peculiar, enormous development of the bill in these two genera, while in *Burhinus* no such change has taken place, is of great interest; moreover the difference in formation of the bill in these two is extraordinary. The fact that *Esacus* and *Orthorhamphus* generally agree in absolute coloration while differing as forcibly in bill-formation, would induce speculation—especially as *Burhinus* has much the same coloration as *Ædicnemus*: though it has become larger than *Esacus*, yet the bill has scarcely developed at all.

GENUS—BURHINUS.

BURHINUS Illiger, Prodrömus Mamm. et Av., p. 250,

1811 Type *B. magnirostris*.

Also spelt *Burhinus* Billberg, Synops. Faunæ Scand., Vol. I., pt. II., tab. A, 1828 (cf. Austral Av. Rec., Vol. II., p. 40, 1913).

Planorhamphus Billberg, Synops. Faunæ Scand.,

Vol. I., pt. II., tab. A, 1828 (cf. Austral Av.

Rec., Vol. II., p. 40, 1913) Type *B. magnirostris*.

BURHININE birds with short bills, short wings, long tails, and long legs and feet.

The bill is shorter than the head, thick, and strong; nostrils pervious; the nasal depression is less than half the length of the bill with the linear nostrils placed in its anterior portion; the culmen is much less than half the length of the metatarsus. The wing is short with the second primary longest, the first equal to the third; the wing is much less than three times the length of the metatarsus.

The tail, consisting of twelve rectrices, is long and wedge-shaped, and more than half the length of the wing. The legs are long; a long tibia is exposed; the metatarsus is reticulate throughout, and is nearly half the length of the wing. There is no webbing between the toes, and there is no hind toe.

The genus *Ædicnemus* differs in its smaller size and in the proportions of the wing, tail, and culmen. Thus the culmen is almost equal to half the metatarsal length; the tail is about half the wing-length; and the wing, with the first primary longest, is about three times the length of the metatarsus.



J.G. Keulemans, del.

Witherby & C^o

$\frac{2}{5}$

BURHINUS MAGNIROSTRIS.
(STONE-PLOVER).

Order CHARADRIIFORMES

Family BURHINIDÆ.

No. 217.

BURHINUS MAGNIROSTRIS MAGNIROSTRIS.

STONE-PLOVER.

(PLATE 173.)

CHARADRIUS MAGNIROSTRIS Latham, Index Ornith., Suppl., p. lxvi., 1801; New South Wales.

Charadrius magnirostris Latham, Index Ornith., Suppl., p. lxvi., 1801; Strickland, Ann. Mag. Nat. Hist., Vol. XI., p. 337, 1843 (New South Wales).

Charadrius grallarius Latham, Ornith Suppl., p. lxvi., 1801 (New South Wales).

Charadrius fraenatus id., ib., p. lxvii. (New South Wales).

Ædicnemus longipes Vieillot, Nouv. Dict. d'Hist. Nat., Vol. XXIII., p. 232, 1818 (New South Wales); *id.*, Galer. des Ois., Vol. II., p. 84, pl. 228, 1825; Temminck and Laugier, Planch. Color. d'Ois., Vol. IV., pl. 386, 1826.

Ædicnemus magnirostris Stephens, in Shaw's Gen. Zool., Vol. XI., pt. II., p. 462, 1819.

Himantopus grallarius id., ib., Vol. XII., pt. I., p. 184, 1824.

Burhinus novæ-hollandiæ id., ib., Vol. XIV., pt. I., p. 342, 1826 (substitute-name for *C. magnirostris* Latham).

Charadrius giganteus Wagler, Isis, p. 648, 1829 (New South Wales).

Burhinus magnirostris Gray, Ann. Mag. Nat. Hist., Vol. XI., p. 194, 1843.

Ædicnemus major Brehm, Isis 1845, p. 357 (New South Wales).

Ædicnemus grallarius id., ib.; Gould, Birds Austr., Vol. VI., pl. 5, 1845; Sturt, Narr. Exp. Centr. Austr., Vol. II., App., p. 48, 1849; Gould, Handb. Birds Austr., Vol. II., p. 210, 1865; Diggles, Handb. Birds Austr., Vol. II., pl. 96B, 1877; Seebohm, Geogr. Distr. Charadr., p. 83, 1887; Ramsay, Tab. List Austr. Birds, p. 19, 1888; North, Austr. Mus. Cat., no. 12, p. 297, 1889; *id.*, Birds County Cumberl., p. 109, 1898; Keartland, Birds Melb. Distr., p. 114, 1900; Legge, Proc. Austr. Assoc. Adv. Sci., Vol. IV., p. 980, 1892; Campbell, *ib.*, Vol. V., p. 423, 1893.

Ædicnemus giganteus Gray, Genera Birds, Vol. III., p. 535, 1844.

Burhinus grallarius Reichenbach, Nat. Syst. Vögel, p. xviii., 1852; Sharpe, Cat. Birds Brit. Mus., Vol. XXIV., p. 18, 1896; Hall, Key Birds Austr., p. 79, 1899; *id.*, Insect. Birds Victoria, p. 179, 1900; Campbell, Nests and Eggs Austr. Birds, p. 766,

THE BIRDS OF AUSTRALIA.

1901; Cleland, *Emu*, Vol. V., p. 191, 1906; Sharpe, *Hist. Coll. Brit. Mus., Birds*, p. 148, 1906; Hall, *Key Birds Austr.*, p. 79, 1906; *id.*, *Useful Birds South Austr.*, p. 194, 1907; Mathews, *Handl. Birds Austral.*, p. 29, 1908; Austin, *Emu*, Vol. VII., p. 77, 1907; Cleland, *ib.*, Vol. VII., p. 188, 1908; Littler, *Handb. Birds Tasm.*, p. 119, 1910.

Ædicnemus australis Sclater, *Proc. Zool. Soc. (Lond.)* 1859, p. 212 (nude name).

Burhinus magnirostris magnirostris Mathews, *Nov. Zool.*, Vol. XVIII., p. 225, 1912; *id.*, *List Birds Austr.*, p. 75, 1913.

DISTRIBUTION. New South Wales; Victoria; Tasmania; South Australia.

Adult male. General colour of the upper-surface pale grey with black shaft-lines, more broadly on the scapulars, and brown bars and mottlings on the upper tail-coverts and tail; lesser upper wing-coverts brown margined with buff, the median-coverts broadly margined on the basal portion with buffy-white, which give the appearance of an irregular wing-band; the marginal-coverts round the bend of the wing greyish-brown with black shaft-lines; bastard-wing, primary-coverts and quills black with a broad white band on the four outer primaries, secondaries dark brown with paler margins, the long innermost secondaries like the long scapulars; outer tail-feathers mottled with grey and barred with brown on the outer web and barred with brown and white on the inner webs and tipped with black; fore-head, lores, cheeks, a streak below the eye, and superciliary-line white like the chin and throat; ear-coverts, fore-neck and breast buff with dark shaft-streaks, which are much broader on the breast; abdomen and axillaries white; flanks and under tail-coverts buff; under wing-coverts grey with dark brown shaft-lines, the greater series with brown tips; bill black; iris greyish-yellow; legs yellow, feet brown. Total length 550 mm.; culmen 51, wing 297, tail 170, tarsus 138.

Adult female. Similar to the adult male, but smaller; culmen 50, wing 275, tarsus 132.

Nestling, in down. Whitish-grey above with four longitudinal black lines, two of which meet on the tail, each fringed with sandy-buff; head whitish-grey, more or less mixed with black; a black spot on the fore-head, which is continued over the eye on to the ear-coverts, also a black spot in front of the eye and a line of the same colour below the latter; throat and under-surface white with a more or less buffy tinge.

Nestling, in partial down. Crown of head, hind-neck, back, scapulars, and tail blue-grey with dark centres to the feathers; outer scapulars tinged with rufous; the grey down still adhering to the feathers on the sides of the crown, sides of neck, rump, and tail; fore-head, eyebrow, and throat white; lores and ear-coverts blackish; quills black with white downy tips; lower-throat and fore-neck dark buff with broad black shaft-lines which extend on to the sides of the body; abdomen, lower-flanks, and thighs buffy-white; under tail-coverts sandy-buff.

Young. Head and hind-neck grey, with dark central streaks to the feathers, the down still adhering to the feathers of the latter; the feathers of the back, scapulars, and lesser wing-coverts broadly margined with rufous, becoming brighter and inclining to chestnut on the wings; median coverts for the most part white with dark shaft-lines; tail grey barred and mottled with brown; cheeks and ear-coverts buff with dark shaft-streaks; abdomen and thighs white, the latter tinged with buff; under tail-coverts cinnamon-buff.

Nest. None made.

Eggs. Clutch, two; similar to those of the other subspecies.

Breeding-season. August to January.

STONE-PLOVER.

CAPTAIN S. A. WHITE writes : " I have seen this bird in almost every place I have visited on the Australian coast, and at times it is very numerous on the sandy beaches to be found in many places of the Kangaroo Island Coast line ; it is a very elegant bird and nimble of foot, always tripping along the sand in a sprightly manner. They lay two eggs in a slight depression in the sand just above high-water mark."

Mr. J. W. Mellor sends me the following : " Known as the Scrub Curlew ; its mournful wail, resembling the word curlew, drawn out and produced in whistling manner, is extremely weird and mournful when heard on a still night in the lonely back-woods. The bird is both nocturnal and diurnal, its large eyes giving it the power to collect the rays of light, and see with comparative ease on the darkest night. It relies more upon its power of running than flight, and when disturbed in the daytime will make off at a smart pace through the scrub, taking to the wing if flushed hurriedly, but will not fly far before it again pitches and is off like lightning. It usually goes about in pairs, but occasionally several may be seen together, but this, I have noticed, is more often than not when it has its young ; these are able to make off as soon as hatched, when they are pretty little balls of grey fluff and down, and should danger come nigh, the little things will squat in an instant, and with outstretched necks lay motionless on the ground, their grey coloring so assimilating the surroundings that they are passed over unobserved by those looking for them. This is a characteristic of the old birds, and it seems to be born in the chicks, as they resort to this means of eluding their enemies as soon as they are out of the shell. I have these birds in semi-captivity at our place, ' Holmfirth,' Fulham, South Australia, where I have been able to breed them and watch their peculiar habits ; they lay their two eggs on the bare ground, without any pretence at a nest, but the bird soon picks up little bits of sticks, leaves, and bits of dirt, etc., and places them promiscuously about the eggs, so that they are not noticeable unless closely examined. In the wild state I have seen them select a site for nesting, near a she oak (*Casuarina*) where the fallen seed cones lay about, and these did good service to prevent the eggs being seen too easily, and even in the open aviaries at ' Holmfirth,' they will choose a place near a pine-tree, where there are a lot of seed cones laying around, with the object doubtless of protecting their eggs from the intruder ; the typical colour of the eggs is a light stone ground thickly sprinkled with spots and blotches and various markings of brown, some appearing as if beneath the surface of the shell, the markings being undefined at the edges, run off into the ground coloring to a great extent. The female of one pair of birds that had always laid eggs of a truly reddish coloration, exactly resembling the eggs of the Brown hawk,

THE BIRDS OF AUSTRALIA.

and when shown to even good ornithologists and zoologists, they would pronounce them eggs of this bird; the shape, of course, was not precisely the same, being more swollen at one end, typical of the Scrub Curlew shape. They start breeding early August, and when this occurs, they will probably have a second clutch, and end late, November, December. They are very widely distributed: I have seen them in all parts of South Australia, also in Victoria, New South Wales. It is strange indeed that they are only accidental in Tasmania, as that place is well adapted for them, and identical with their habitats on the mainland. They feed exclusively on insects, mice, and such-like diet, and are most useful birds to the farmer and agriculturist in ridding the place of small animal pests; they are generally protected throughout the year all over Australia."

Mr. Frank Howe reports: "This form is found all over South-east Australia, and is very partial to the open plain country where there is good tall timber and a little scrub or fairly long grass. I have met them in the Mallee, at Rushworth and Parwan, and it was exceedingly common around Stawell. I have noticed a strange thing with 'Curlews,' Plovers and other ground-loving birds, and that is when they are disturbed and run off they always take off in a direction to your left and rarely to the right. Their weird call is known to everybody familiar with bushlore, and as they utter it the head is held well up, and they take small steps as it is emitted. As you disturb them in the nesting season they make off to your *left* with head well down and the body in a crouching position, and it is indeed hard to locate the spot, as they have generally 'located' you first.

"The eggs, two and sometimes three, are laid on the ground in grassy country, and there is little or no attempt at a nest; they are very difficult to see as they harmonise perfectly with their surroundings, and they are always of the same colour as the soil. That is to say, where the soil is chocolate they take on that colour, and when grey they assume a greyish tint. The markings, too, are a great help in protecting them, as they appear to match the dead grasses about the nest."

Mr. Charles Belcher writes: "The 'Curlew,' as it is universally called in Australia, is well distributed over Victoria. It does not occur in thick bush lands where there are no considerable clearings, but otherwise is found in most classes of country, with a preference for lightly timbered grassy districts. I once found a fresh egg (no trace of a nest) so late as December 3rd, but the normal breeding season is the months of August to October."

Mr. Sandland records: "Very rare at Bulah, South Australia. I see birds once or twice a year and occasionally hear them calling at night."

STONE-PLOVER.

Mr. E. J. Christian writes: "Up here in Northern Victoria one occasionally sees a pair, never less, but more often hears the long drawn-out weird call by night. Their protective coloring and cunning protects them from their enemies. One will often see one of these birds take the position of a stick, especially in places where much wood lies on the ground. The other day I saw one before it saw me, and so was able to watch it. I rode up towards it, and it soon saw me, and instantly took the shape of a thin piece of wood sticking out of the ground. It puzzled me for a moment or two to distinguish it from pieces of wood, although I still had my eyes on it.

"A large flock passed over here in July, 1903, and although late at night, one could guess that it was not very small by the length of time one could hear the call. I generally find these birds in timbered water-courses, where they seem to find food by looking amongst the thick layers of dead and mouldy green leaves. I, however, saw two to-day (May, 1908) on a high-timbered ridge. They are also to be found amongst the rushes round swamps and that is where they nest here. It is extremely difficult to find their eggs, which are laid on the ground. In the daytime they seldom use their wings for long, and then just rise off the ground. They are very quick runners and, having long legs, they cover the ground quickly with their long strides. They are not as a rule very shy and will let one approach fairly close before moving. I have never seen them very far from timber, but last spring I was riding about 400 yards from the trees on the open plain and I found two young ones, lying very close to each other and looking very like a piece of wood; when I handled them they looked at me in a helpless way, but when I put them down they ran off to the water at full speed."

"Generally distributed over the county [of Cumberland]. Usually seen singly or in pairs, but on one occasion at Toongabbie I saw a flock of seven. The mournful and depressive note of this species resembling 'Kooloo, Kooloo,' is usually heard at night."*

"Although nocturnal in habit these birds are extremely wary in the brightest sunshine. On the approach of an intruder they run off very rapidly, and only fly when followed. At times they will lie flat on the ground as if dead, and in this position I caught two of them near Heidelberg. They are usually found in pairs in open forests. At night they utter a loud weird note which sounds like 'wetlo,' or 'curlew,' which probably accounts for their being confused with the Curlew by our bush naturalists."†

"At times these Plovers performed peculiar antics or dances. When in this humour one of the birds would run with outstretched wings 20 or

* North, *Birds County Cumberl.*, p. 109, 1898.

† Kearnland, *Birds Melb. Distr.*, p. 114, 1900.

THE BIRDS OF AUSTRALIA.

30 yards, bending occasionally to this or that side or even turning suddenly completely round . . .

“We found, amongst other food, that the birds would eat mice and half-fledged sparrows. On giving them one of these, the Stone-Plover would take it by the head and give it blows, as if to break the bones and render the morsel less bulky, but these efforts seemed too feeble to accomplish much. After some minutes the animal would be swallowed whole . . . Both sexes assisted in the incubation process.”*

Littler (*l.c.*) has grave doubts about this bird being found in Tasmania, except as an accidental visitor.

This bird was first made known to science when Latham examined the Watling Drawings. In these, three different paintings are included, and being made by artists who had been trained in quite distinct schools, the paintings looked very dissimilar.

I append Latham's descriptions as they are worthy of study :—

GENERAL SYNOPSIS BIRDS, Suppl., Vol. II., 1801.

(p. 319) Great-Billed Pl[over]. Size of the *Golden Plover*: bill black, stout, and very broad, resembling the *Tody* genus: the general colour of the upper parts is blue-grey, streaked with black; beneath pale ash, but with the same markings: forehead, part of the crown, and ears, minutely spotted: quills black; base of several of the primaries white: legs dull blue.

Inhabits New South Wales.

(p. 319) High-Legged Pl[over]. This has a nearly straight bill, the crown, back, and wings blue grey, marked with black streaks, largest on the back and crown; irides yellow: beneath the eyes, on the ears, a large patch of brown; the under parts are dusky white, streaked on the neck and breast with pale brown: inner ridge of the wing ferruginous; quills black. It stands very high upon its legs, not much less so than the *Long-legged Plover*: the colour of them pale blue.

Inhabits New South Wales.

(p. 320) Bridled Pl[over]. The bill in this bird is blueish; the plumage on the upper parts of the body and tail pale cinereous blue, dashed with small brown streaks: sides of the neck marked with a broad dusky streak, taking rise beneath the eye, and descending to the beginning of the back: the under parts of the body are pale, marked with narrow dusky lines on the breast; belly white; quills dusky; legs yellow.

Inhabits New South Wales.

In the *Index Ornith., Suppl.*, 1801, published simultaneously, Latham named these three, *Charadrius magnirostris* (p. lxvi.), *C. grallarius* (p. lxvi.), and *C. frænatus* (p. lxvii.).

Though at the time unrecognised in collections, Illiger introduced for the first-named a new generic name, *Burhinus*.

* Cleland, *Emu*, Vol. V., p. 192, 1906.

STONE-PLOVER.

The second specific name came into use for the Australian Stone-Plover, but when Strickland examined the drawings he wrote (*Ann. Mag. Nat. Hist.*, Vol. XI., p. 337, 1843):—

“A comparison of the original drawing of *Charadrius magnirostris* Latham with a specimen in my collection, has convinced me that this bird is none other than *Ædicnemus grallarius* (Lath.). We have here an instructive example of the mode in which errors arise and are propagated in Natural History. The artist who drew the bird which Latham named *Charadrius magnirostris*, has represented with considerable exactness the plumage of *Ædicnemus grallarius*, but by throwing too strong a shade into the nasal groove, he led Latham to describe the beak as ‘very broad, resembling the *Tody* genus.’ Next came Illiger, who in his *Prodromus Systematis Mammalium et Avium*, published in 1811, had the rashness to found a genus, *Burhinus*, on Latham’s imperfect description of a rude drawing, and the consequence has been that for thirty years our systems of ornithology have been haunted by a ‘*Burhinus magnirostris* a vox et præterea nihil,’ unknown both to nature and to science. The original drawing which led to all this confusion has now assisted in dispelling it.”

In spite of this the bird continued to be called *Ædicnemus grallarius*.

When Sharpe monographed these birds (*Cat. Birds Brit. Mus.*, Vol. XXIV., p. 18, 1896), he admitted the genus *Burhinus* as distinct, but continued to use, most incorrectly, the specific *grallarius*.

If the genus-name be admissible, the species-name upon which the genus is founded must be used, if valid. It is impossible to reject the species-name as the greater fault is in the genus-name, the latter being expressly proposed on account of the only inaccuracy in the specific description. This species is easily subdivided into subspecies, the first ornithologist drawing attention to variation in the species being Ramsay, who named the form from the Gulf of Carpentaria, on account of its constantly longer metatarsus, *Ædicnemus longipes*, but that name is preoccupied by Vieillot’s who used it for the typical form.

At the present time I recognise four subspecies, but probably more will later be differentiated.

The variation as yet observed is somewhat peculiar. New South Wales birds are typical and therefore bear the name—

Burhinus magnirostris magnirostris (Latham).

The Northern birds which Ramsay differentiated, though they have a longer metatarsus, do not seem to quite equal the typical birds in the length of the wing. These must be called—

Burhinus magnirostris ramsayi Mathews.

THE BIRDS OF AUSTRALIA.

I have distinguished the birds from North-west Australia on account of their generally smaller size and also their more rufescent coloration. The name to be used is—

Burhinus magnirostris rufescens Mathews.

This name was given to birds collected at Parry's Creek, North-west Australia, and at present I associate with these, specimens procured in the Northern Territory and Melville Island, but later anticipate the separation of these latter.

The South-west Australian birds are easily distinguished by their still smaller size, the short tarsus being especially noticeable. These I have named—

Burhinus magnirostris broomei Mathews.

The bird figured and described is a male, collected at Gosford, New South Wales, in June, 1890.

BURHINUS MAGNIROSTRIS RUFESCENS.

LITTLE STONE-PLOVER.

BURHINUS MAGNIROSTRIS RUFESCENS Mathews, Nov. Zool., Vol. XVIII., p. 225, 1912 ;
North-west Australia.

Edicnemus grallarius Kearland, Trans. Roy. Soc. South Austr., Vol. XXII., p. 185,
1898.

Burhinus grallarius (not Latham) Carter, Emu, Vol. III., p. 174, 1904 ; Hartert, Nov.
Zool., Vol. XII., p. 202, 1905 ; Ingram, Ibis 1907, p. 394 ; Hall and Rogers, Emu,
Vol. VII., p. 141, 1908 ; Mathews, *ib.*, Vol. IX., p. 56, 1909 ; *id.*, *ib.*, Vol. X.,
p. 104, 1910.

Burhinus magnirostris rufescens Mathews, Nov. Zool., Vol. XVIII., p. 225, 1912 ; *id.*,
Austral Av. Rec., Vol. I., p. 55, 1912 ; *id.*, List Birds Austr., p. 76, 1913.

DISTRIBUTION. Mid- and North-west Australia ; Northern Territory.

Adult male. Differs from the adult of *B. m. magnirostris* in being reddish on the back,
and in being smaller ; wing 280 mm., culmen 51, tarsus 125.

Adult female. Very similar to the adult male but smaller.

Immature seem to go through the same changes as those of the typical form.

Nest. A depression.

Eggs. Clutch, two ; ground-colour stone, blotched with dark brown, more especially on
the larger end ; axis 53 mm., diameter 39.

Breeding-season. September and October.

MR. J. P. ROGERS, writing from North-west Australia, says : " In the day
they gather in small flocks of nine or ten, and spend the day under a bush
on the edge of the plains. Some were collected at Mungi." Mr. Rogers
also found a nest of this species on October 18th, 1908, under a " gutta-
percha " tree on the edge of the salt-marsh at the " 9 mile " ridge, near
Wyndham, North-west Australia. It contained two eggs, which were placed
in a slight depression (measuring 9 by 9 in.) amongst some horse-droppings.
The eggs were placed exactly parallel to each other and were $1\frac{1}{2}$ in. apart.
The small ends of the eggs were pointing the same way. They were also
fairly numerous on Melville Island, Northern Territory.

THE BIRDS OF AUSTRALIA.

Mr. Tom Carter observes: "Generally distributed, but nowhere abundant, and to a certain extent it is locally migratory, according as the weather is wet or dry. About Point Cloates where the sandy nature of the country never allowed any surface water to lay, they were very rarely heard or seen except in the winter months. They were in the habit of passing the day on the stony ranges, under the shelter of some bush or small tree."

"Several of these birds were seen on the stony ground near our camel depôt during the month of August. They were extremely shy and difficult to approach. Although these birds are nocturnal in their habits, they commenced to run before I was within 150 yards of them, and defied all attempts to capture or shoot them. As we approached the Fitzroy River, before daybreak of 6th November, the weird notes of the Southern Stone Plover were amongst the delightful music that greeted our ears, as it is well known that although this bird spends the day in the forest or open plain, it always resorts to water at night."*

The bird described is the type collected at Parry's Creek, North-west Australia, on October 19th, 1908, by Mr. J. P. Rogers.

* Keartland, *Trans. Roy. Soc. South Austr.*, Vol. XXII., p. 185, 1898.

BURHINUS MAGNIROSTRIS RAMSAYI.

NORTHERN STONE-PLOVER.

BURHINUS MAGNIROSTRIS RAMSAYI Mathews, Nov. Zool., Vol. XVIII., p. 225, 1912 ;
Queensland.

Ædicnemus grallarius (not Latham) Ramsay, Proc. Zool. Soc. (Lond.) 1877, p. 335.

Ædicnemus longipes (not Vieillot) *id.*, Tab. List Austr. Birds, p. 35, 1889 (Gulf of Carpentaria,
Queensland).

Burhinus grallarius Berney, Emu, Vol. VI., p. 110, 1907 ; Ingram, Ibis 1908, p. 463.

Burhinus magnirostris ramsayi Mathews, Nov. Zool., Vol. XVIII., p. 225, 1912 ; *id.*,
Austral Av. Rec., Vol. I., p. 55, 1912 ; *id.*, List Birds Austr., p. 76.

DISTRIBUTION. Queensland.

Adult male. Differs from the adult of *B. m. magnirostris* in its much longer tarsus ; wing
290 mm., culmen 46, tarsus 146.

Adult female. Similar to the male but smaller.

Immature seem to go through the same changes as the typical form.

Nest. None made.

Eggs. Clutch, two ; ground-colour buff, blotched, sometimes very heavily, with dark
brown and light grey ; axis 53-54 mm., diameter 41-42.

Breeding-season. September and October.

“ A SCARCE bird in the [Richmond] district [of North Queensland] confining
its short and irregular visitations to the wettest half of the year, January
to July. During the past nine years I have only once met with the miscalled
‘ Curlew ’ during the period July to December. I flushed a single individual
in August 1899.”*

The bird described is the type, collected at Mackay, Queensland.

* Berney, *Emu*, Vol. VI., p. 110, 1907.

BURHINUS MAGNIROSTRIS BROOMEI.

WESTERN STONE-PLOVER.

BURHINUS MAGNIROSTRIS BROOMEI Mathews, Nov. Zool., Vol. XVIII., p. 226, 1912; South-west Australia.

Ædicnemus grallarius (not Latham) Harting, Proc. Zool. Soc. (Lond.) 1874, p. 459.

Burhinus grallarius Ogilvie-Grant, Ibis, 1910, p. 178; Carter, *id.*, p. 657.

Burhinus magnirostris broomei Mathews, Nov. Zool., Vol. XVIII., p. 226, 1912; *id.*, Austral Av. Rec., Vol. I., p. 55, 1912; *id.*, List Birds Austr., p. 75, 1913.

DISTRIBUTION. South-west Australia.

Adult male. Differs from the adult of *B. m. magnirostris* in being smaller, especially in the tarsus; wing 272, culmen 44, tarsus 115.

Adult female. Similar to the male but smaller.

Immature seem to go through the same changes as do those of the typical form.

Nest. None made.

Eggs. Clutch, two; ground-colour buff, with wide streaks of very dark brown all over; axis 53 mm., diameter 41.

Breeding-season. September and October.

MR. TOM CARTER sends me the following: "About Broome Hill they are fairly numerous in the prevailing open forest country, usually lying concealed in the daytime in the shelter of some tangle of fallen boughs, or large bunches of rushes. October 8, 1907, I saw a young bird about a fortnight old. November 3, 1907, while driving along a bush road, my buggy wheel narrowly missed passing over two eggs that were laid on the bare ground within six feet of the wheel-tracks along the road. One of the parent birds ran away from the eggs when the buggy was almost upon it, and the male appeared a few yards distant. The chicks were just chipping from the eggs. October 20, 1907, I noted two fresh eggs.

"When disturbed in the daytime, one or both birds of a pair will sometimes run a short distance, and then stand motionless in a rigid position, with head and neck outstretched forward, and the whole body in an elongated form. When so standing, they could easily be mistaken and passed by, as being old stumps of small trees."

The bird described is the type collected at Broome Hill, South-west Australia, on October 2nd, 1907, by Mr. Tom Carter.

GENUS—ORTHORHAMPHUS.

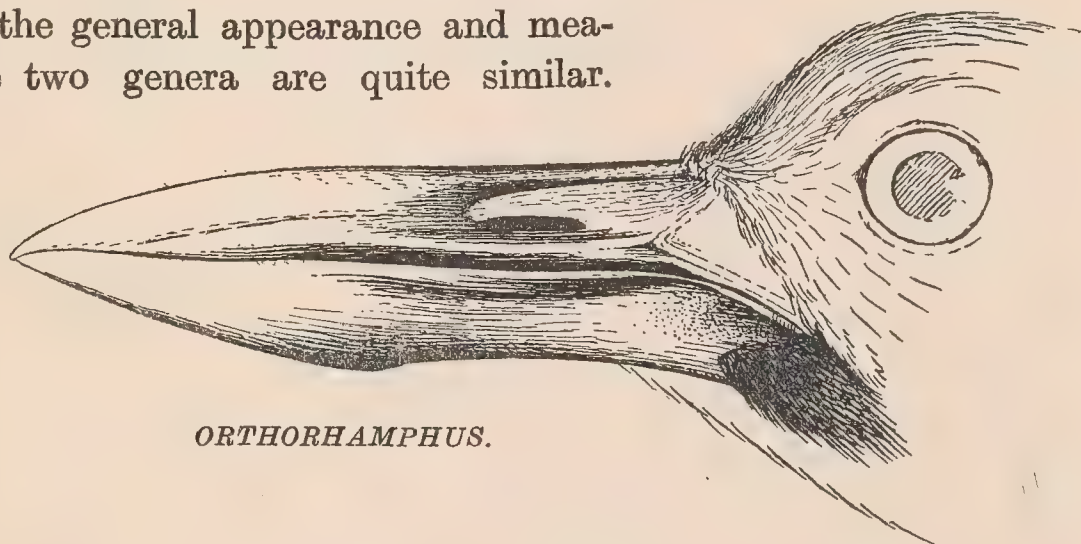
ORTHORHAMPHUS Salvadori, Ann. Mus. Civ. Gen.,

Vol. V., p. 312, 1874 Type *O. magnirostris*.

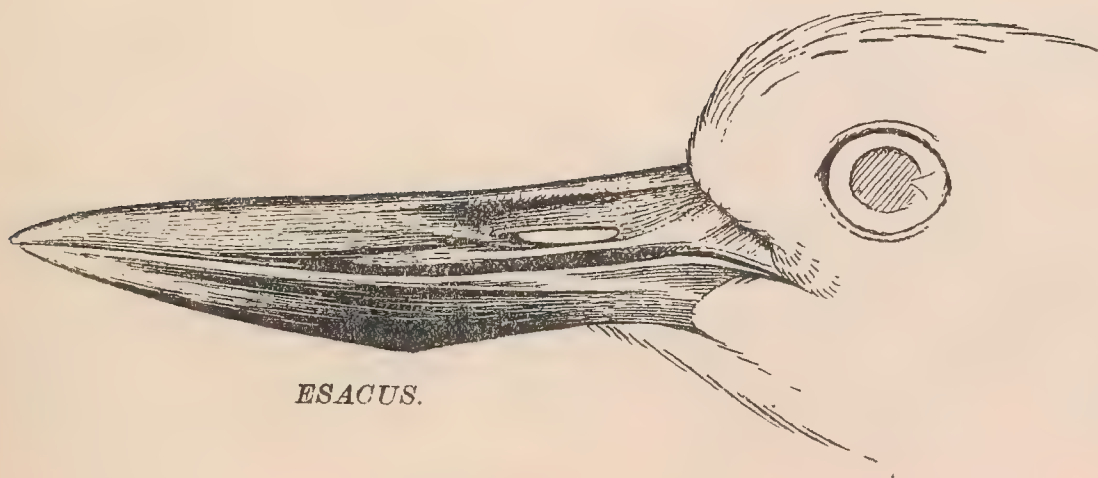
BURHININE birds with very long, stout bills, short wings, short tail, and stout long legs. The bill is massive, longer than the head, with tip slightly decurved; the nasal depression is about half the length of the culmen with the long linear nostrils anteriorly placed; the length of the culmen almost approaches that of the metatarsus.

The wing is short with the first three primaries longest and subequal. The tail is rounded and short, being less than half the length of the wing. The legs are long and stout; the metatarsus is reticulate throughout and is only about one-third the length of the wing. No hind toe.

This genus has been lumped with *Esacus*, but the drawings here represented show the great differences seen in the bills. Otherwise the general appearance and measurements of the two genera are quite similar.



ORTHORHAMPHUS.



ESACUS.

ORTHORHAMPHUS MAGNIROSTRIS NEGLECTUS.

AUSTRALIAN LONG-BILLED PLOVER.

(PLATE 174.)*

ESACUS MAGNIROSTRIS NEGLECTUS Mathews, Nov. Zool., Vol. XVIII., p. 226, 1912 ;
Lewis Island, North-west Australia.

Esacus magnirostris (not Vieillot) Gould, Birds Austr., Vol. IV., pl. 6, 1845 ; *id.*, Handb. Birds Austr., Vol. II., p. 213, 1865 ; Ramsay, Proc. Zool. Soc. (Lond.) 1877, p. 335 ; *id.*, Proc. Linn. Soc. N.S.W., Vol. II., p. 196, 1878 ; *id.*, Tab. List Austr. Birds, p. 19, 1888 ; Legge, Proc. Austr. Assoc. Adv. Sci., Vol. IV., p. 979, 1892 ; Campbell, *ib.*, Vol. V., p. 425, 1893 ; Hartert, Nov. Zool., Vol. XII., p. 202, 1905.

Orthorhamphus magnirostris (pars) Sharpe, Cat. Birds Brit. Mus., Vol. XXIV., p. 22, 1896 ; Hall, Key Birds Austr., p. 79, 1899 ; Campbell, Nests and Eggs Austr. Birds, p. 768, 1901 ; Carter, Emu, Vol. III., p. 175, 1904 ; Hall, Key Birds Austr., 2nd ed., p. 79, 1906 ; Mathews, Handl. Birds Austral., p. 30, 1908 ; Carter, Ibis 1910, p. 657 ; Broadbent, Emu, Vol. X., p. 242, 1910.

Esacus magnirostris neglectus Mathews, Nov. Zool., Vol. XVIII., p. 226, 1912 (Lewis Island, N.-W. Australia).

Esacus magnirostris melvillensis Mathews, Austral Av. Rec., Vol. I., p. 85, 1912 (Melville Island, Northern Territory).

Esacus magnirostris queenslandicus Mathews, *ib.*, Vol. II., p. 6, 1913 (Mackay, Queensland).

Orthorhamphus magnirostris neglectus Mathews, List Birds Austr., p. 76, 1913.

DISTRIBUTION. North-west Australia ; Northern Territory ; North Queensland.

Adult male. Head, neck all round, back, and scapulars brown, with dark shaft-lines to the feathers of the head and hind-neck ; lesser upper wing-coverts dark brown ; median coverts banded with white, which shows a narrow wing-bar, the small coverts round the bend of the wing and greater coverts pale grey, outside edge of wing white ; bastard-wing and primary-coverts dark brown ; primary-quills also dark brown with white on the inner webs, the outer primary white on the outer web towards the tip, the second one mottled only with white, the third, fourth, and fifth have no white on the outer web, the sixth, seventh, eighth and ninth entirely white except a small patch of brown on the outer web of the sixth

* The Plate is lettered *Esacus magnirostris*.



J.G. Keulemans, del.

Witherby & Co.

$\frac{2}{5}$
ESACUS MAGNIROSTRIS.
(LONG-BILLED STONE-PLOVER).

AUSTRALIAN LONG-BILLED PLOVER.

near the tip ; secondaries white, obliquely banded with brown, the long innermost secondaries like the back ; tail-feathers brown banded with white, the white band preceded by a dark narrow cross-line ; lores, sides of crown, and a line under the eye black like the sides of the nape and lower-cheeks ; a white line above and below the eye which unites behind the latter and extends backward on to the sides of the nape ; chin and throat white ; breast grey, becoming paler and inclining to buffy-white on the abdomen ; thighs and under tail-coverts buff ; axillaries and under wing-coverts white ; bill black, operculum at base of bill, eye-lid and naked skin yellow ; feet yellowish-grey. Total length 530 mm., culmen 76, wing 280, tail 120, tarsus 95.

Adult female. Similar to the adult male but smaller ; culmen 72, tarsus 90.

Nest. None made.

Eggs. Clutch, one or two ; ground-colour cream-white, streaked and marked all over with dark olive-brown, some of the markings being large and bold without assuming any regular form, and others mere blotches about an eighth of an inch in diameter, while many of the streaks were as fine as hair, and were of a crooked or zig-zag form ; axis 61-66 mm., diameter 44-46 (Gould).

Breeding-season. October.

Mr. J. P. ROGERS, writing from North-west Australia, says : "Two single birds have been on the beach in front of my camp. When at Carnot Bay, about 70 miles up the coast from Broome, I only saw about six pairs of this bird. As I was on the beach about fourteen days a month for seven months, they seem rather rare. Both at Derby and Carnot Bay they were always on the beach. They are usually in pairs, sometimes two or three pairs are seen together, but I have never seen odd numbers."

This species was also collected on Melville Island.

Mr. Edwin Ashby records a pair of eggs from Port Keats, Northern Territory.

Mr. Tom Carter writes : "I have never seen this bird outside the tropics. There were certain places on the beach of the North West Cape where a pair or two of these birds could always be seen. At one of these places I found a fresh egg on October 25th, 1900. It was laid in a slight depression without any nesting material, on coarse shingle on the top of a high ridge of that material, within reach of the sea spray at high tide, and could easily have been overlooked as a rather larger piece of stone than the surrounding ones. I never saw this species further south than a place about twenty miles north of Point Cloates. Lat. 22-30° south, being about one hundred miles within the Tropic line. The cry is very similar to that of *grallarius*, but rather harsher in tone. The native name is the same for both species, viz : Wee-lò."

"A pair of these interesting birds frequented the sand-pits in the neighbourhood of Cardwell [North Queensland] during the time of my visit ; they proved too wary to be approached within gun-shot ; the white on the

THE BIRDS OF AUSTRALIA.

wings shows very conspicuously in flight. It is not a rare species but always very difficult to obtain when found near any of the settlements."*

"I never saw more than one at a time, and always walking on the mud or sandy shores on the islands† [off Cardwell]."

The type bird figured and described was collected on Lewis Island, North-west Australia, in June, 1901.

On account of the difficulty of procuring series of this bird until last year, the Australian birds were lumped under the specific name *magnirostris* Vieillot.

In the *Nov. Zool.*, at the place cited, I separated the Australian bird and designated as the type-locality of Vieillot's species Binongka, Celebes. Since then I have further separated the Australian breeding birds into three races, but at the present time, in view of the short series available, I am ranking all the Australian forms together under one subspecific name. That further collections will necessitate their rehabilitation is confidently anticipated, as a study of extra limital forms shows that slight differences can be seen in birds from each separate locality.

When Australian birds are contrasted with extra-limital specimens, though these may vary among themselves, the former are seen to be constantly much darker, both on the upper and lower surfaces.

* Ramsay, *Proc. Zool. Soc. (Lond.)* 1877, p. 335.

† Broadbent, *Emu*, Vol. X., p. 242, 1910.

GENUS—AUSTROTIS.

AUSTROTIS Mathews, Austral Av. Rec., Vol. II., p. 12,

1913 Type *A. australis*.

OTIDINE birds with medium-sized bill, long wings, long legs, and long tail.

The bill is rather long, flattened, wide at the base, with the nostrils placed near the base of the culmen. The culmen is less than one-third the length of the tail. The crown of the head bears a crest, but this is not extended on to the hind-neck. The feathers of the throat and fore-neck are also elongated. The wing is long and rounded, the fifth primary longest; the wing-length is more than twice that of the tail.

The tail, composed of twenty feathers, is long and rounded and is more than three times the length of the culmen and less than half that of the wing.

The legs are strong and long; the metatarsal covering is composed throughout of hexagonal scales; the metatarsus is less than one-third the length of the wing. The toes are strong and comparatively long; no hind toe.

The Bustards, of which only one representative occurs in Australia, form a well-defined group—regarded as somewhat intermediate between the Cranes and Charadriine birds: the majority of their characters favour the latter, and in the "Handlist" they simply appear as a suborder of the *Charadriiformes*. They differ remarkably however from the remaining suborders in external appearance, being mostly birds of large size, very stoutly built, yet able to fly well and run very quickly. Several species have a gular pouch which is capable of inflation, with an opening underneath the tongue.

The technical characters of the group, as regards external features, are thus summarised in the *Catalogue* of the Birds in the British Museum, Vol. XIII., p. 282: "Bill rather flattened and obtuse, the nostrils ovate and pervious, the frontal feathers descending to the hinder margin of the nostrils. Wings with the secondaries almost as long as the primaries. Tarsi longer than middle toe and claw, covered with reticulate scales, the toes scaled across, the nails flattened, with a horny lateral edge; no hallux."

At the same place the Australian species was included in the genus *Eupodotis*, used for an African form. In the *Nov. Zool.*, Vol. XVIII., p. 8, 1911, I pointed out that this use of *Eupodotis* was incorrect and that the name to be used was *Choriotis*. Upon recently examining the species in the

THE BIRDS OF AUSTRALIA.

course of this work, I found that probably the close resemblance of the Australian bird to the type of *Choriotis* was not significant of real close affinity, but simply a case of convergence such as might easily occur in a group of this character. I therefore introduced the genus *Austrotis* for the Australian bird with the differential points noted, as: "Differs from *Choriotis* (type *C. arabs*) in its shorter, broader bill: probably we have here a case of convergence, as the nostrils in *Choriotis* are placed at some distance from the base of the culmen, while in *Austrotis* they are very near the base; the tarsus is more than three times the length of the middle toe in *Choriotis*, whereas in *Austrotis* it is less; the wing-formulæ in the two genera are different: in *Choriotis* the third, fourth, and fifth primaries are subequal and longest; the fifth primary in *Austrotis* is longest, the sixth being equal to the fourth and longer than the third."

In addition, in *Choriotis* the wing is less than twice the length of the tail, while the metatarsus is about one-third the wing-length.

AUSTROTIS AUSTRALIS AUSTRALIS.

EASTERN BUSTARD.

OTIS AUSTRALIS Gray, in Griffith's ed. Cuvier's Anim. Kingd., Vol. VIII., p. 305, 1829 ; New South Wales.

Otis australis Gray, in Griffith's ed. Cuvier's Anim. Kingd., Vol. VIII., p. 305, 1829 ; Murie, Proc. Zool. Soc. (Lond.) 1868, p. 471, pl. xxxvi.

Otis australasianus Gould, Proc. Zool. Soc. (Lond.) 1840, p. 176, 1841 (New South Wales) ; *id.*, Birds Austr., Vol. VI., pl. 4, 1842 ; Sturt, Narr. Exp. Centr. Austr., Vol. II., App., p. 47, 1849 ; Macgillivray, Voy. "Rattlesnake," Vol. I., p. 57, 1852 ; Ramsay, Ibis 1867, p. 134.

Eupodotis australis Gray, Genera Birds, Vol. III., p. 533, 1845 ; Ramsay, Tab. List Austr. Birds, p. 19, 1888 ; Broadbent, Proc. Roy. Soc. Queensl., Vol. V., p. 29, 1888 ; Sharpe, Cat. Birds Brit. Mus., Vol. XXIII., p. 328, 1894 ; Kcartland, Rep. Horn. Sci. Exp., pt. II., p. 109, 1896 ; Hall, Key Birds Austr., p. 78, 1899 ; *id.*, Insect. Birds Viet., p. 177, 1900 ; Campbell, Nests and Eggs Austr. Birds, p. 762, 1901 ; Berney, Emu, Vol. III., p. 68, 1903 ; Hall, Key Birds Austr., p. 78, 1906 ; *id.*, Useful Birds South Austr., p. 192, 1907 ; Berney, Emu, Vol. VI., p. 109, 1907 ; Mathews, Handl. Birds Austral., p. 30, 1908.

Otis novæhollandiæ Leichhardt, Journ. Exp. Austr., p. 260, 1847 (n.n.).

Choriotis australis Bonaparte, Comptes Rendus Sci. (Paris), Vol. XLIII., p. 416, 1856 ; Gould, Handb. Birds Austr., Vol. II., p. 208, 1865 ; Ramsay, Ibis 1867, p. 417 ; North, Austr. Mus. Cat., no. 12, p. 296, 1889 ; French, Viet. Natural., Vol. VIII., p. 11, 1891 ; Kcartland, Birds Melb. Distr., p. 114, 1900.

Choriotis australis australis Mathews, Nov. Zool., Vol. XVIII., p. 226, 1912.

Austrotis australis australis Mathews, List Birds Austr., p. 76, 1913.

DISTRIBUTION. South Queensland ; New South Wales ; Victoria ; South Australia.

Adult male. Differs from the adult of *C. a. derbyi* in being dark bluish-grey above, not brown. On the whole they are also larger, but they seem to vary considerably.

Immature and Nestling. Not described.

Nest. None made.

Eggs. Clutch, one ; ground-colour buff, smudged or blotched all over with brown ; axis 87 mm., diameter 58.

An egg from Coomooboolaroo on the Dawson River, Queensland, has the ground-colour greenish, with a few blotches (more at the larger end) of reddish-brown ; axis 79 mm., diameter 53.

Breeding-season. January to April ; June and July (Berney, North Queensland) ; September to November (Ramsay, New South Wales).

EASTERN BUSTARD.

CAPTAIN S. A. WHITE sends me the following: "These fine birds once visited the plains round Adelaide in the autumn every year, but have now become very rare. I have noticed that they always paid this part of the country their annual visit when the crickets were very numerous. These insects, varied by salt-bush or grass, constituted their diet at that time of the year. I have met with these birds north of Adelaide in flocks of 20 to 30 birds; they are generally very wary and require a lot of stalking."

Mr. Edwin Ashby says this bird is very fond of feeding in stubble paddocks, picking up the grain that has been dropped during stripping.

Mr. Sandland reports that years ago they were common at Burra, South Australia, but that now, owing to the birds eating the phosphorised pollard laid for rabbits, they have become very scarce. Foxes also kill the stragglers and destroy the eggs, so that as the bird only lays one or two eggs a year it will probably soon be driven out of the cultivated districts."

Mr. F. L. Berney considers January, February, and March as the usual breeding-months, although he has found eggs after these months. "The 'strutting' and 'calling' are also confined to these months, with the end of December thrown in . . . The 'call' is a soft, hollow roar, which one finds hard to describe in words, but it can be produced by contracting the lips to a circle just large enough to insert the point of one's little finger and then pronouncing 'who-o-o-o' drawn out by expressing the breath fairly forcibly so that the sound is produced by the rigid lips and not the roof of the mouth."*

"The birds are most useful, destroying large numbers of grasshoppers. They are only half-insectivorous, as various forms of low-growing vegetation, particularly the bitter fruit of a small wild melon, are eaten. The numbers to be seen here vary according as the season is favourable to them or not. In November, 1903, I saw a flock of 43; in February 1905 I counted 100 in sight at the one time, and I remember, some sixteen or seventeen years ago, I counted 300 in the course of a ride of eight miles over a piece of country that had been swept the night before by a bush fire.

"Bush fires are a great attraction to 'Turkeys.' The birds may be noticed coming up from different quarters as the rising smoke gives them the signal. At night I have watched them following close behind the fire, darting in and out amongst the flames and smoke, catching the grasshoppers and other creatures driven out more or less overcome by the heat.

"January to April are the nesting months. I have never found eggs in December, and until this year I had no record for April. Very rarely do they nest in the winter. I have only two notes in reference to their doing so occasionally, both in 1901.

* *Emu*, Vol. III., p. 69, 1903.

EASTERN BUSTARD.

"As regards the number of eggs laid by the Bustard, of twelve nests that I have found, five contained two eggs and seven one only; it is possible that some of these single-egg nests were incomplete at the time, and that a second egg may have been subsequently added to some of them. Only in one instance do I know for a fact that the single egg was incubated.

"There is a big difference in the size and weight of the two sexes; eleven birds, not picked but taken as they came, averaged 15 lbs. 1 oz., seven males going from $11\frac{1}{2}$ lbs. to 19 lbs., and averaging $16\frac{3}{4}$ lbs.: and four females all apparently mature, weighed 8, $7\frac{1}{2}$, $6\frac{1}{2}$ and 7 lbs. respectively, averaging 7 lbs. I have measured two birds only . . . spread of the wings of the male 6 feet 8 inches, and the female 5 feet $4\frac{1}{4}$ inches. In the male the gular pouch was developed to its fullest extent."*

Captain Sturt said he had known this bird to weigh 28 lbs., and Macgillivray records one he killed as weighing $22\frac{1}{2}$ lbs.

In the *Proc. Zool. Soc. (Lond.)* 1868, pl. xxxvi., Murie figures this bird "displaying." The tail is spread out over the back, the head is thrown up and the gular pouch puffed out, and the pendulous skin (covered with feathers) unfolded from the lower-neck and which almost touches the ground.

"The premonitory symptoms observable when the Bustard is about to exhibit himself in the pride of lust (for such it seems to me to be) is a slight swelling of the inframandibular portion of the throat, while the head is thrown upwards. Immediately afterwards the neck swells and the feathers of the lower parts concomitantly bulge out and descend gradually downwards in the form of a bag, oftentimes nearly reaching the ground.

"If the paroxysm is a strong one, then the tail is shot upwards and forwards over the back, the rectrices coming almost in contact with the neck.

"In this peculiar attitude, with bloated neck, hanging baggy chest, elevated tail, and stilt-like legs, the creature struts about in a somewhat waddling manner, the elongated pouch swaying to and fro. The feathers of the throat start out on end; those of the depending sac are also raised, but less upright. While all this has taken place the bird seems to have gulped in the air, or rather with partly open gape, to have taken a long, deep and a forced inspiration.

"The acme of inspiring effort and strange attitude attained, the Bustard begins to snap the mandibles together in a loud manner and utter a series of cooing sounds for a short interval of time. Usually and more frequently he starts towards the female Bustards in a most dignified manner . . .

* Berney, *Emu*, Vol. VI., p. 109, 1907.

THE BIRDS OF AUSTRALIA.

“Occasionally the paroxysm is less marked, and he sits or stands blowing out in a playful manner the subglobular dilatation under the maxillæ, but not throwing down the pouch or erecting the tail.

“This periodical excitement, although lasting altogether about a couple of months, does not continue with vigour the whole of that time . . .

“The accession of this most remarkable display occurs chiefly early in the morning or at sundown during the period of excitement and it is only near the climax that it happens during the middle of the day. At such times the fits succeed each other frequently, as often as every hour.”*

“During August and the three following months the Bustards betake themselves in pairs to the thinly-wooded districts for the purpose of breeding, returning to the plains and more open land in December, when they associate in small flocks of from five to ten in number. On very hot days they may with more certainty be found in the edges of the plains, in the shade of the trees, returning again in the evenings to their favourite feeding-grounds on the slopes and hill-sides.

“During the winter, they are found more often on the slopes amongst the trees, sheltered from the wind and snow.

“On the 8th of March, 1866, while at Lake George, three young Bustards, about the size of a large domestic fowl, were seen together. Although on the same flat there were several old birds, they never accompanied them; and I have been informed by several residents in that district that the young always leave their parents when a few months old.

“The Australian Bustard breeds during September, October, and November, and lays but two eggs on the ground, without any nest—a small bare spot being selected amongst the trees on the hill-side: a few sticks and blades of grass are sometimes found together round the eggs . . . So far as I am aware the Australian Bustard has but one brood in the season.”†

This bird early claimed the attention of explorers, one reason being its fine size combined with its edible characters.

Thus, in Hawkesworth's *Voyages*, Vol. III., p. 521, 1783, we read, concerning Captain Cook's Voyage up the east coast of Australia: “Upon the shore we saw a species of the bustard, one of which we shot, it was as large as a turkey and weighed seventeen pounds and a half. We all agreed that this was the best bird we had eaten since we left England and in honour of it we called this inlet Bustard Bay.”

In the reprint of Cook's *Journal*, edited by Wharton, in 1893, the entry regarding this appears on p. 260: “May 23, 1770 [Cook had entered “a Large

* *Proc. Zool. Soc. (Lond.)* 1868, p. 474.

† Ramsay, *Ibis* 1867, p. 418.

EASTERN BUSTARD.

Open Bay ”]. All or most of the same sort of Land and Water fowl as we saw at Botany Harbour we saw here; besides these we saw some Bustards, such as we have in England, one of which we kill'd that weighed $17\frac{1}{2}$ pounds, which occasioned my giving this place the name of Bustard Bay (Lat. $24^{\circ} 4'$, Long. $208^{\circ} 22' W.$).”

When Iredale wrote about “Solander as an Ornithologist” (*Ibis* 1913, pp. 127-135), he recorded (p. 133): “In the first place I was struck by the fact that no land birds were described, save such as flew on board the ship . . . I have stated I could trace none, and I do not think any were preserved. I believe that the descriptions and figures were considered sufficient and that after these were made the birds were *consigned to the pot.*”

Recently re-examining the Solander Manuscript I noted this bird formed an exception to the first statement made by Iredale while it confirmed the second: for Solander has fully described the specimen above noted, the only land-bird that did not fly on board ship, and we are definitely told that the bird was eaten.

I am now investigating, but it would appear that this was the first endemic Australian bird to be technically described, though the description was not published.

Flinders, in his *Voyage to Terra Australis*, Vol. II., often alludes to it (p. 30): “Several bustards were seen near Cape Keppel”; (p. 145) Wellesley Islands, November, 1802—“We saw neither quadruped nor reptile upon the islands. Birds were rather numerous; the most useful of them were ducks of several species, and bustards; and one of these last, shot by Mr. Bauer, weighed between ten and twelve pounds, and made us an excellent dinner. The flesh of this bird is distributed in a manner directly contrary to that of the domestic turkey, the white meat being upon the legs, and the black upon the breast”; (p. 171) Pellew Group, December, 1802—“In the woods were hawks, pigeons of two kinds, and some bustards.”

In view of these notices published in 1814 it is remarkable that Gould should have described it as new as late as 1841 and it is still more peculiar that he was only twelve years too late, and that it was described for the first time by Gray in 1829, almost sixty years after it was first met with.

AUSTROTIS AUSTRALIS DERBYI.

WESTERN BUSTARD.

(PLATE 175.)*

CHORISOTIS AUSTRALIS DERBYI Mathews, Nov. Zool., Vol. XVIII., p. 226, 1912; Derby, North-west Australia.

Choriotis australis Kearnland, Trans. Roy. Soc. South Austr., Vol. XXII., p. 185, 1898.

Eupodotis australis Le Souëf, Emu, Vol. II., p. 156, 1903; Carter, *ib.*, Vol. III., p. 174, 1904; Hartert, Nov. Zool., Vol. XII., p. 202, 1905; Ogilvie-Grant, Ibis 1910, p. 177; Carter, *ib.*, p. 657.

Choriotis australis derbyi Mathews, Nov. Zool., Vol. XVIII., p. 226, 1912; *id.*, Austral Av. Rec., Vol. I., p. 55, 1912.

Austrotis australis derbyi Mathews, List Birds Austr., p. 77, 1913.

DISTRIBUTION. West Australia; Northern Territory; Northern Queensland.

Adult male. Entire back, wings, and tail dark brown, everywhere finely vermiculated with sandy-buff; median and greater wing-coverts white with pale brown vermiculations on their basal portions, subterminally black, and tipped with white; bastard-wing and primary-coverts lead-grey edged with white at the tips; primary-quills pale brown, more or less vermiculated with white towards the base; secondary-quills greyish-brown, finely vermiculated with sandy-buff and tipped with white, the long innermost secondaries like the back; middle tail-feathers also like the back, the outer feathers subterminally black, tipped with white, and some dark bars more or less indicated; crown of head and an elongated nuchal crest black; lores, eyebrows, and ear-coverts buffy-white; throat, sides of face, neck all round, and breast white, finely barred with dark brown and tinged with buff; an irregular black band across the breast, the feathers of which are black, white, and buff; abdomen, sides of body, and axillaries buffy-white; lesser under wing-coverts white; the small marginal coverts black, edged with white, the larger series grey, vermiculated with white; a patch of black feathers on the lower-flanks vermiculated with white and buff; the short under tail-coverts black tipped with white, the long ones buffy-white irregularly marked with brown, the thighs also buffy-white more or less vermiculated with brown. Total length 1,155 mm.; culmen (exposed portion) 72, wing 610, tail 245, tarsus 180.

Adult female. Similar to the adult male but smaller and differs in having the tail regularly barred with dark brown, the outer marginal upper wing-coverts coarser, and the sides of the face and neck all round darker. Total length 830 mm.; culmen (exposed portion) 51, wing 563, tail 210, tarsus 149.

Nest. None made.

* The Plate is lettered *Choriotis australis*.



H Grönvold. del

Witherby & Co.

$\frac{1}{5}$
CHORIENTIS AUSTRALIS.
(PLAIN TURKEY).

WESTERN BUSTARD.

Eggs. Clutch, one to two; ground-colour reddish-brown with blotches of darker brown all over; axis 75 mm. by 55; eggs from West Australia are smaller, darker, and more heavily blotched than those from the eastern side of the continent.

Breeding-season. May to October (Carter); November (Kearland).

MR. J. P. ROGERS, writing from North-west Australia, says he saw these birds at Marngle Creek, but they were too wild to shoot. On the Fitzroy River and near Derby they were also seen. When numerous they are quite tame, but if scarce they are usually very wild.

Mr. Tom Carter sends me the following: "The native name of this bird is 'Padderra.' It is numerous throughout the Mid-west of this state, where they may be seen after good rains, feeding upon grasshoppers, etc., over the open grassy and scrubby plains, as far as the eye can reach, dotted about in pairs or small parties of four to six. They come on the coast country at least as far south as within twelve miles of Perth, and at Point Cloates I have on several occasions seen them actually on the beach, but whether for the sake of food, water or coolness, I cannot say. As a rule they are wary birds and difficult to approach except by means of a buggy, or other vehicle; or by riding or leading a horse. Odd birds have been seen in this locality (Broome Hill) but this year, 1911, they are fairly common, and I have seen several in my paddocks, and heard of others being shot in the neighbourhood. Probably the opening out of this country by increased clearing and cultivation of land has caused them to come in greater numbers, as they do not like to feed in timber or thick country, probably because they cannot see the approach of any danger so readily. The breeding season in the Mid-west is mainly from the end of May until the beginning of October, but I think, that like many birds there, they will lay after any heavy rains, irrespective of season, as there is then an assured food supply for many weeks. The full clutch is two eggs, but occasionally one only is found. On the 4th June, 1900, I found one egg at Point Cloates, and on 8th June, 1900, saw young birds that could fly well. (There had been heavy rains from March that year.) 9th July, 1900, saw young birds about a quarter grown. 1st August, 1898, two eggs. 5th August, 1901, two eggs, also on 28th August. 2nd October, 1887, saw a nest containing one egg while driving sheep on the Murchison River. My attention was attracted by seeing a large 'Turkey' with widely-expanded wings, confronting the sheep, and with croaking noises trying to keep them from the vicinity of the eggs, and in after years I saw other similar instances of boldness in the protection of eggs. There is hardly any nesting material, the eggs being laid on open grass or spinifex country practically on the bare ground. On one occasion at Point Cloates, I was driving down a long sloping hill covered with spinifex (*Triodea*) at a

THE BIRDS OF AUSTRALIA.

good speed, when I saw two Bustard's eggs laid between some bunches of spinifex, and before I could pull up the off wheel crushed both eggs. When in down, there is always a great disparity in size in a pair of young birds. Doubtless male and female. On different occasions I have taken young birds home but could never succeed in rearing any. The Bustard is to a great extent, nocturnal in its feeding, as very many times when camping out, I have heard the notes of the birds throughout the night, and seen and heard many flying above the camp."

"Near the Fitzroy River [North-west Australia] Mr. Ferris found a fresh egg on the 11th November, and several young birds were seen a few weeks later. On two occasions birds with their single chicks were noticed walking to water, and on attempting to approach them we found the young ones disappear. In each case they had forced themselves into the hole formed by a horse's hoof in the dry mud. Near Mount Campbell I counted eighteen Bustards all in view at once. Whilst travelling near the Nerrima Creek on 1st April, I bagged a brace of Bustards, which were in capital condition, and must have weighed nearly 20 lbs. each . . . These birds were in heavy moult, but the fact that the grasshoppers had been plentiful no doubt accounted for their condition."*

The bird figured and described is a male, collected at Greenough Crossing, West Australia, in 1897.

* Keartland, *Trans. Roy. Soc. South Austr.*, Vol. XXII., p. 185, 1898.

GENUS—M A T H E W S I A .

- MATHEWSIA Iredale, Bull. Brit. Ornith. Club, Vol.
 XXVII., p. 47, 1911 Type *M. rubicunda*.
Antigone Reichenbach, Nat. Syst. Vögel., p. xxiii.,
 1852 (not *Antigone* Gray 1847, *Antigonus* Hubner
 1816, *Antigona* Schumacher 1817, nor *Antigonia*
 Lowe 1844) Type *M. collaris*.

PSOPHIINE birds with long bills, long neck, long wings, long legs and feet.

The culmen is long, compressed, straight, and sharp pointed; the upper mandible has on each side a depression extending rather more than half its length; the nostrils covered with a membrane; an obsolete groove can be traced in the lower mandible. The culmen is longer than the head, little shorter than the tail, and more than half the length of the metatarsus. The head is denuded of feathers save on the ear-coverts. The wing is long, with the inner secondaries longer and resolving themselves into drooping plumes. The tail, composed of twelve feathers, is more than one-third the length of the wing. The legs are very long, as also the exposed tibia, while the very long metatarsus is scutellate, and is equal to half the length of the wing. The toes are long with no webbing between; hind toe present and raised above the level of the others; the middle toe is about half the length of the culmen.

As regards the genus-name to be used, Iredale (l.c.) wrote: "Reichenbach (cf. *Nat. Syst. Vögel.*, p. xxiii., 1852) proposed *Antigone* for the species *A. torquata*, which is now known by the specific name of *A. collaris* Boddaert. Congeneric with this species is classed the bird described by Gould in 1847 as *Grus australasianus*, but which Mr. Mathews has recently shown had been named *Ardea rubicunda* by Perry, nearly forty years previously (cf. *Nov. Zool.*, XVII., p. 499, 1910). As a generic name *Antigone* seemed unsatisfactory, for Hübner had introduced *Antigonus* in 1816, Schumacher *Antigona* in 1817, and Lowe *Antigonia* in 1844. None of these, however, absolutely invalidated *Antigone*, but we were relieved from this annoying state of affairs by the action of Gray, who, in 1847, utilized *Antigone* for a mollusc.

THE BIRDS OF AUSTRALIA.

As I can trace no alternative name for this genus of Cranes, I herewith propose *Mathewsia* nom. n., and designate as the type *M. rubicunda* (Perry) (= *Ardea rubicunda* Perry)."

In the *Austral Avian Record*, Vol. I., pp. 122-123, 1912, appears a note by Professor Brasil questioning Iredale's action, and there is also printed a reply by Iredale. At the present time there can be no hesitation whatever by systematists in accepting the name proposed by Iredale and rejecting *Antigone*, as though a quibble might be framed, the International Commission on Nomenclature have given Opinions governing this particular question, and the Rules will later be amended so as to eliminate all quibbles.

MATHEWSIA RUBICUNDA RUBICUNDA.

EAST AUSTRALIAN CRANE.

ARDEA RUBICUNDA Perry, Arcana, June 1810 ; Botany Bay, New South Wales.

Ardea rubicunda Perry, Arcana, June 1810.

Grus antarctica Illiger, Abhandl. Ak. Wissen. Münch., p. 230, 1816 (New South Wales).

Grus australasianus Gould, Proc. Zool. Soc. (Lond.) 1847, p. 220, 1848 ; Sturt, Narr. Exp. Centr. Austr., Vol. II., App., p. 51, 1849 ; Bennett, Gath. Nat., p. 221, 1860 ; Gould, Handb. Birds Austr., Vol. II., p. 290, 1865 ; Ramsay, Proc. Zool. Soc. (Lond.) 1877, p. 340 ; *id.*, Tab. List Austr. Birds, p. 20, 1888 ; North, Austr. Mus. Cat., no. 12, p. 314, 1889 ; Kearland, Birds Melb. Distr., p. 116, 1900.

Ardea antigone Leichhardt, Journ. Exp. Austr., p. 38, 1847.

Laomedontia australasiana "Reich." Bonaparte, Consp. Gen. Av., Vol. II., p. 98, 1857.

Antigone australasiana Sharpe, Cat. Birds Brit. Mus., Vol. XXIII., p. 265, 1894 ; Campbell, Nests and Eggs Austr. Birds, p. 760, 1901 ; Le Souëf, Emu, Vol. II., p. 156, 1903 ; Simpson, *ib.*, p. 217, 1903 ; Hall, Key Birds Austr., p. 78, 1906 ; Berney, Emu, Vol. VI., p. 109, 1907 ; Austin, *ib.*, Vol. VII., p. 76, 1907 ; Mathews, Handl. Birds Austral., p. 30, 1908.

Antigone rubicunda Mathews, Nov. Zool., Vol. XVII., p. 499, 1910.

Mathewsia rubicunda Iredale, Bull. Brit. Ornith. Club., Vol. XXVII., p. 47, 1911.

Mathewsia rubicunda rubicunda Mathews, Nov. Zool., Vol. XVIII., p. 227, 1912 ; *id.*, List Birds Austr., p. 77, 1913.

DISTRIBUTION. Queensland ; New South Wales ; Victoria ; South Australia.

Adult male. Differs from the adult male of *M. r. argentea* in being much darker, altogether lacking the silvery-grey appearance of the former. They seem also to be larger birds than those from the North-west.

Nest. Usually none made.

Eggs. Clutch, two ; ground-colour white, covered with a few spots of reddish-purple ; axis 92-99, diameter 56-60.

Breeding-season. September to March (Berney, North Queensland).

CAPTAIN S. A. WHITE writes : "These fine birds are distributed over the eastern parts of Australia. They prefer the soft, marshy country, where they lay their eggs on the bare ground, the eggs being two in number. The birds have a very stately walk, and can rise on the wing to an immense height, uttering a deep croaking note."

THE BIRDS OF AUSTRALIA.

Mr. Charles F. Belcher sends me the following: "Except north of the dividing range, and in the extreme west, the Native Companion must now be described as a very rare bird in Victoria. I have never seen it in the Geelong District. In the more arid parts of the country of Rodney, as for instance on the great plain South of Echuca, it is still fairly numerous, but with the progress of settlement it is dying out and before many years is likely to be extinct in Victoria."

Mr. E. J. Christian, writing from Northern Victoria, says: "This bird has a habit in this part of pulling up young wheat, and if a flock gets on to a wheat field no little damage is done. Also it has a habit of wringing chickens' and pullets' necks.

"They will stand in a reedy swamp on one leg for hours at a time catching frogs and other inhabitants of the water. They also eat young grass. They are becoming less common here every day. Six years ago large flocks could be seen in the paddocks, now few single birds are met with. On the 18th May I saw the first two here for some time. The creek was in flood and these two were flying over to it. When travelling they fly at a great height and make a loud peculiar note. I have often heard their notes and looked for a long while before seeing them. At times they are right out of sight. If there are clouds about it is impossible to see them as their colours blend."

"In November last, near Echuca, Victoria, I noticed a few flocks of Native Companions (*Antigone australasiana*) travelling westward towards the lakes at the mouth of the Murray River. They were coming in from the lakes further north, where they are to be seen in hundreds in the winter time. The reason so many flocks often travel at the same time is because of the hot weather coming on suddenly, although I have seen some flocks a week behind the leaders."*

"A permanent resident here [North Queensland], generally to be seen congregated in small parties of eight or ten, but at times as many as forty or fifty get together. During the summer, which is their time of nesting, they will more often be seen in pairs.

"My record of nests with eggs commences with 28th September, and follows on two nests in October, one in December, January one, February three, March two, and ends up with a nest and eggs on 4th April.

"They soar at times to a great height, to an altitude I believe of two or three miles. Indeed, at such times they would be unnoticed were attention not drawn to them by their trumpeting."†

* Simpson, *Emu*, Vol. II., p. 217, 1903.

† Berney, *ib.*, Vol. VI., p. 109, 1907.

EAST AUSTRALIAN CRANE.

"Its flight is easy and graceful . . . It lays two eggs on the bare ground principally about sedges and reeds on the borders of a lagoon or marsh . . .

"When in a flock together, it is amusing to watch their various antics. They will pirouette about like opera dancers as if getting up a ballet. They figure away, devoting all their energies to dancing and jumping, twisting and throwing up one leg in a most graceful manner; then they will tumble upon the ground with the feet uppermost and finish by rolling about like a dog.

"When two or three fly together, they generally follow in a line; but when numerous, they appear to have a leader, whose movements they invariably follow, sometimes forming two groups like the letter V reversed; they fly to a great height, appearing like specks in the sky."*

"Native Companions were found very plentiful in all the swamps in the Herbert district. Early in the morning their hoarse croaking cry was most frequently heard."†

I pointed out in 1910 (*Nov. Zool.*, Vol. XVII., p. 499) that Perry in *Arcana* had first described this bird from New South Wales, and this name must of course be used.

Though this fine bird was beautifully figured in the Watling Drawings no. 230, Latham did not consider it worthy of a name, simply ranking it as "Indian Cr.[ane], Var. B" (*Suppl. II., Gen. Synops. Birds*, p. 298, 1801), though noting the differences thus: "This differs from the others, in having the bill and fore-part of the crown yellowish; lores and space round the top of the neck, bare; and crimson; irides pale orange; chin and throat beset with black bristles; general colour of the plumage dull pale blue; quills and tail black; legs and bare part of the thighs black, dotted with white. Inhabits New South Wales."

Gould, in 1847-1848, separated it under the name *Grus australasianus*, and it has been known by this name until recently.

In the *Nov. Zool.*, Vol. XVII., p. 499, 1910, I showed that *Ardea rubicunda* Perry 1810, should replace the name given by Gould. In the *Victorian Naturalist*, Vol. XXIX., pp. 7-16, 1912, Iredale and I gave some notes upon the work, the *Arcana*, in which Perry described *Ardea rubicunda*. Perry gave a good coloured figure and carefully noted the details in which it differed from the Indian Crane: there can be no objection whatever raised to the recognition of Perry's name.

In 1816 Illiger had also bestowed a name upon this bird, naming Latham's Indian Crane, var. B, *Grus antarctica*. This name seems also to have been overlooked, as it has over thirty years priority over Gould's name.

* Bennett, *Gath. Nat.*, p. 222, 1860.

† Ramsay, *Proc. Zool. Soc.* (Lond.) 1877, p. 340.

MATHEWSIA RUBICUNDA ARGENTEA.

WEST AUSTRALIAN CRANE.

(PLATE 176.)*

MATHEWSIA RUBICUNDA ARGENTEA Mathews, Nov. Zool., Vol. XVIII., p. 227, 1912;
Derby, North-west Australia.

Grus australianus Kwartland, Trans. Roy. Soc. South Austr., Vol. XXII., p. 188, 1898.

Antigone australasiana Ingram, Ibis 1909, p. 615; Mathews, Emu, Vol. X., p. 104,
1910.

Mathewsia rubicunda argentea Mathews, Nov. Zool., Vol. XVIII., p. 227, 1912; *id.*,
Austral Av. Rec., Vol. I., p. 55, 1912; *id.*, List Birds Austr., p. 77, 1913.

DISTRIBUTION. North-west Australia; Northern Territory.

Adult male. General colour above and below silvery-grey, with pale edgings to the
feathers of the upper-parts; bastard-wing, primary-coverts and quills dark brown;
lower-throat covered with hair-like feathers; bill and crown of head olive-green;
papillæ on the sides of the face and the back of the neck red; iris yellow; tarsi
and feet brown. Total length 1,220 mm.; culmen 163, wing 580, tail 210,
tarsus 290.

Adult female. Similar to the adult male; culmen 150, wing 555.

Young, still retaining a portion of the downy plumage. Differs from the adult by having
the head covered with pale rufous feathers, becoming paler and inclining to buff
on the upper hind-neck, the grey ear-coverts only slightly indicated.

Immature. Differs from the adult in being darker and the feathers of the mantle edged
with brown.

Nest. None made.

Eggs. Clutch, two; surface minutely pitted; ground-colour creamy-white, sparingly
covered with spots of brown and lavender; axis 84-91 mm., diameter 60 to 62.

MR. J. P. ROGERS, who collected the type of this subspecies, says: "On the
11th August, 1908, I watched two birds feeding. They were up to their knees
in water and were probing in the mud for their food. On an average their
heads remained under water seven seconds, but on one occasion twenty
seconds.

"A pair are always to be met with in the billabongs near Parry's Creek,
Wyndham, North-west Australia. When not feeding in the billabongs they

* The Plate is lettered *Mathewsia rubicunda*.



H Grönvold. del

Witherby & Co

$\frac{1}{6}$
MATHEWSIA RUBICUNDA.
(*NATIVE COMPANION*).

WEST AUSTRALIAN CRANE.

spend their time digging up the roots in a dry swamp. They and the Wallaby (*Macropus agilis*) have dug up most of the roots in an area of 150 acres. The large flock broke up into pairs on 15th November, and were scattered all over the plain.

“When on my journey from Mungi, inland from Derby, North-west Australia, while on the Fitzroy River, many small flocks were seen, some pairs and others of six individuals. None were seen at Mungi as the dry country was not suited to them. One I wounded trotted fully a mile before I drove it into a waterhole and secured it. Near Derby, they were numerous and watered at the recently completed artesian bore five miles from the town, and fed on the salt marshes. I believe it is increasing in numbers in West Kimberley, owing to the blacks being fed and worked on the Stations, and also owing to the fact that eagle-hawks and dingoes are destroyed by the Station owners.”

“These birds were generally met with in pairs until April, when they were seen in large flocks. They were found in the river-bed and on the open plains, but seem to prefer the timbered country. Their loud notes often betrayed their presence some time before the birds themselves were seen.”*

The bird figured and described is a male, collected at Derby, North-west Australia, by Mr. J. P. Rogers.

* Keartland, *Trans. Roy. Soc. South Austr.*, Vol. XXII., p. 188, 1898.

GENUS—T H R E S K I O R N I S .

THRESKIORNIS Gray, List Genera Birds, App.,

p. 13, 1842 Type *Threskiornis æthiopicus*.

Also spelt *Thereschiornis* Brehm, Naumannia 1855, p. 290.

Ibis (Cuvier), Cat. Birds Brit. Mus., Vol. XXVI., p. 4, 1896.

(Not *Ibis* Lacepède 1799.)

PLEGADINE birds with long, curved, slender bill, long wings, long legs and feet, and long tail.

The bill is very long, comparatively slender, and strongly decurved: a long, shallow but distinct groove extends along the sides of the upper mandible for its whole length: the nostrils are linear and placed in this groove at its base; the head is denuded of feathers; there is a shallow depression on the sides of the lower mandible for about one-third its length. The wing is long and somewhat rounded, only about twice the length of the culmen; the third primary is longest, the second and fourth a little shorter and subequal, the first less than the fourth; the inner secondaries are longer than the primaries, and are elongated as ornaments, with the webs somewhat disconnected.

The tail is rounded, composed of twelve feathers and about one-third the length of the wing. The legs are long: the metatarsus reticulate throughout, and a long, exposed tibia. The toes are long, with a short web between, and a long hind toe is present.

The present genus has been recently known under the name *Ibis*, following the *Catalogue* of the Birds in the British Museum, Vol. XXVI., 1896. In my "Reference List" I used that generic name, referring it to Lacepède 1799 as the earliest introduction. For the genus here known as *Plegadis* Kaup 1829, I used *Egatheus* of Billberg 1828. Towards the end of 1912, Dr. C. W. Richmond wrote me, pointing out the erroneous use of the latter name, and probably also of the former. I therefore investigated the matter, as literature unavailable to Dr. Richmond in America was at my command here. I detailed my results in the *Auk*, Vol. XXX., pp. 92-95, 1913, but as many of my readers will not have that journal at hand for reference, I will summarise my conclusions here.

The generic name *Ibis* was first proposed by Lacepède in a small brochure entitled *Tableau Oiseaux*, and published in 1799. This Table was reprinted in the *Mém. Inst. Nat. Hist.*, Paris, 1801, from which it has been commonly quoted.

THRESKIORNIS.

Only a brief diagnosis is there given, which would cover most of the species referable to the group. In 1802, however, Daudin named the Ibis-like birds described in Buffon's *Historie Naturelle*, according to the Lacepèdean genera, and under the genus-name *Ibis* included fourteen species. Only two of these had been known by the vernacular *Ibis*, and one of these was, moreover, the *Tantalus Ibis* of Linné. Consequently this species, by the principle of tautonymy, must be regarded as the type of *Ibis* Lacepède or Daudin. This use was endorsed by Illiger in 1811, but Cuvier in 1816 utilised *Ibis* for the species *Ibis æthiopica* (Latham), considering that was the true *Ibis* of the ancients. These two species differ so much that they are placed in different families, and the family known as *Ibididæ* must now be called *Plegadidæ*.

The name to be used for *Ibis* Auctorum, not *Ibis* Lacepède or Daudin, is *Threskiornis* Gray, introduced with *T. æthiopicus* (Lath.) designated as type.

Egatheus Billberg 1828, was introduced as an absolute synonym of *Ibis* Lacepède—simply as a classical substitute for that generic name. It is therefore untenable for any other group, and cannot be used for the *T. falcinellus* Linné birds.

The birds commonly known as Ibises form a well-differentiated group, closely allied in structural characters to the Spoonbills, from which they differ in the shape of the bill. The head and neck is bare of feathers, and ornamental plumes are generally developed on the breast and wings.

THRESKIORNIS MOLUCCA STRICTIPENNIS.

WHITE IBIS.

(PLATE 177.)*

IBIS STRICTIPENNIS Gould, Synops Birds Austr., pt. iv., App., p. 7, 1838; New South Wales.

Ibis strictipennis Gould, Synops Birds Austr., pt. iv., App., p. 7, 1838; Ramsay, Proc. Linn. Soc. N.S.W., Vol. I., p. 190, 1877.

Threskiornis strictipennis Gould, Birds Austr., Vol. VI., pl. 46, 1844; *id.*, Handb. Birds Austr., Vol. II., p. 284, 1865; Diggles, Handb. Birds Austr., Vol. II., pl. 102, 1877; Ramsay, Proc. Zool. Soc. (Lond.) 1877, p. 340; *id.*, Tabl. List Austr. Birds, p. 20, 1888; Cox and Hamilton, Proc. Linn. Soc. N.S.W., Ser. II., Vol. IV., p. 420, 1889; North, Records Austr. Mus., Vol. I., p. 118, 1891; Campbell, Vict. Nat., Vol. VIII., p. 73, 1891; Kearnland, Trans. Roy. Soc. South Austr., Vol. XXII., p. 187, 1898.

Geronticus strictipennis Gray, Genera Birds, Vol. III., p. 566, 1847.

Ibis molucca Sharpe, Cat. Birds Brit. Mus., Vol. XXVI., p. 9, 1898; Robinson and Laverock, Ibis 1900, p. 651; Campbell, Nests and Eggs Austr. Birds, p. 940, 1901; Le Souëf, Emu, Vol. II., p. 157, 1903; Hartert, Nov. Zool., Vol. XII., p. 203, 1905; Hall, Key Birds Austr., p. 96, 1906; Berney, Ibis, Vol. VI., p. 114, 1907; Mathews, Handl. Birds Austral, p. 30, 1908; Ingram, Ibis 1908, p. 463; Mathews, Emu, Vol. X., p. 104, 1910; North, Austr. Mus. Sp. Cat., no. 1, Vol. IV., p. 1, 1913.

Ibis molucca strictipennis Mathews, Nov. Zool., Vol. XVIII., p. 227, 1912.

Ibis molucca alligator Mathews, *ib.* (South Alligator River, Northern Territory).

Threskiornis molucca strictipennis Mathews, List Birds Austr., p. 77, 1913.

DISTRIBUTION. Australia generally.

Adult male. General colour above and below white including the back, wings, and tail on the upper-surface, and the breast, abdomen, under tail-coverts, axillaries, and under wing-coverts on the lower-parts; primary-quills tipped with greenish-black, which decreases in extent towards the inner ones; secondaries white with a narrow black shaft-line at the tip, the long innermost secondaries mottled with brown and greenish-black, the barbs of the feathers disintegrated; bare skin under the wings dull red; bill and bare skin on head and neck black; the spot above the eye flesh-colour; star and marks on hinder-head and neck pink; eyes brown, a red circle on the outside; feet and legs pink, joints very black. Total length 800 mm.; culmen 182, wing 370, tail 127, tarsus 110.

Adult female. Similar to the adult male, but smaller in all measurements.

* The Plate is lettered *Ibis molucca*.



J G. Keulemans, del

Witherby & Co

¹/₄
IBIS MOLUCCA.
(WHITE IBIS).

WHITE IBIS.

Immature. Differs from the adult in having the entire head and neck covered with short blackish feathers, which become almost white on the throat and hind-neck, and only represented on the latter by dark shaft-lines; the dark pattern on the outer quills extends more than half their length towards the base, decreasing in extent on the inner primaries much the same as in the adult; the dark shaft-lines on the secondaries more strongly pronounced; some of the short scapulars are hoary-grey, the long ornamental scapulars less broken up and more inclining to brown. Bill black, bare skin below the eye flesh-colour; iris brown; tarsi and feet leaden-black.

Another immature bird is similar to the one already described, but the dark portion on the primaries is more restricted, while the black shaft-streak on the secondaries is broader and extends to the base; the ornamental scapulars browner, the head and neck covered but the feathers darker and much more abraded.

Nest. The eggs are laid on a platform made by bending down the flags.

Eggs. Clutch, three to five; white; shell rough, inside of shell green; axis 70 mm., diameter 41 to 42.

Breeding-season. September (South Australia); October to December (Victoria).

MR. J. P. ROGERS found this bird on Melville Island in December, 1911; they were seen feeding in the mangroves, and were very wild.

Captain S. A. White says that this species is sometimes seen feeding in company with the Egrets. They frequent the River Murray, in South Australia, and the Lakes at the Murray Mouth. Odd ones are to be seen at any time of the year, but in nesting time they congregate in great numbers, and pitch on a dense flag-patch, bend down the flags and make their nests on the vast platform so constructed.

These birds are never seen in such numbers as the Straw-necked variety.

Mr. J. W. Mellor writes: "A very useful bird, coming on to the land of the farmer and devouring large numbers of injurious insects such as crickets and grass-hoppers, which do untold mischief. They breed in September on Lake Albert, South Australia."

Mr. A. Mattingley records: "When just born the skin is fleshy pink. Forehead bare; crown, face, nape and neck sparsely covered with black down. On the throat and lower throat there are three bands of black. Balance of body feathers white."

Mr. Charles Belcher says: "Numerically speaking, this bird stands between the Straw-necked Ibis and the Glossy Ibis. Of recent years the White Ibis has been more often seen in the Coastward districts. From 1886 to 1900 I never saw it near Geelong, but in the last few years have noted it on several occasions. It does not breed South of the dividing range in Victoria, except in the western District, and to all other parts of the State must be looked on as an occasional visitor only."

Gould says: "When satiated it mounted upon the bare branches of the large gum-trees bordering the feeding-place, and then became so

THE BIRDS OF AUSTRALIA.

watchful that it could not be approached within gun-shot without the utmost caution."

Mr. K. H. Bennett found these birds breeding in the flooded country near the Lachlan River, in New South Wales. He says: "On the 30th November, 1890, I started with the intention of visiting the breeding-place of *Geronticus spinicollis*, to reach which I had to ride nearly three miles of flooded country . . . As I approached I could see colonies of the White Ibis . . . the nest only contained young ones in various stages, from just hatched to partly fledged. As I rode up to the bushes on which the nests were placed, the old birds of course flew off, and such of the young ones that were strong enough to do so scrambled out of the nests and attempted to conceal themselves in the dense tangled mass of *Polygonum* stems on which the nests were placed, but in doing so it was evident that numbers would perish, for I could see them suspended by the neck, wings, or legs in all directions, in their clumsy efforts to hide themselves.

"On a further search of the *Polygonum* scrub, which was of immense extent, I had the good luck to discover several other colonies, many of the nests containing eggs, though young birds were far more numerous. The various nests I examined contained from one to three eggs, but, strange to say, they were all in an advanced stage of incubation, no matter what the number was. In no instance did I observe more than three eggs or three young birds in any nest. The nests are nearly flat structures, composed of long, shiny sticks and twigs interlaced through one another, measuring about eighteen inches in diameter by six in length."*

"The eggs of *Threskiornis strictipennis* vary in shape from oval to pointed ovals, are of a very faint greenish-white on the outer surface, and of a dark-green tint on the inner surface when held up to the light" (North).

"The White Ibis chiefly frequents swampy localities, overgrown with long grass, or rushes, preferring those situations which partly conceal it while engaged in its search for various insects, small reptiles, frogs, etc. It is undoubtedly nomadic in habits, wandering about and visiting more favoured districts during periods of drought, and then being absent from them probably for many years."†

"I first found the White Ibis building at the latter end of July, 1900 [on the Clarence River, New South Wales], in a large swamp, where the water is one to four feet in depth, and the reeds in places eight feet high, and in the thickest patch I discovered a colony of this species engaged building their nests. The laying of each straw, of which their very crude nests are

* Bennett, *Austr. Mus. Sp. Cat.*, no. 1, Vol. IV., p. 2, 1913.

† North, *ib.*

WHITE IBIS.

built, appears to be the signal for a unanimous 'caw,' which sounded badly enough, but which seemed either very solemn or very ridiculous, according to the temperament of the onlooker. Previous to my finding them they had broken down the reeds and had woven them to form a long platform or terrace about sixteen feet long, with irregular arms branching for two or three feet on each side, at a height of about a foot above water level. This terrace was nowhere more than about eighteen inches wide on its surface.

"One bird (I could not distinguish between male and female) appeared to have the superintendence of the whole array of nests on his shoulders. He (I take it to be a male) marched about from one to the other of the nests which were in progress of building, apparently giving orders. The females were busy biting off the reeds into lengths of about nine inches, which they laid with great ceremony in criss-cross fashion at the extremity of the above-mentioned arms. A few of these, just sufficient to keep the eggs from rolling into the water, constitute the nest.

"On going to the place some few weeks after, I found that sixteen nests had been made on this platform, and each contained three eggs. Other nests which I found and examined on the same day were abandoned by the birds. In no case have I known them to utilise a nest which I had previously robbed or handled. A peculiar foetid smell pervades the atmosphere in the vicinity of their nests."*

"On arriving at our destination [Ulmarra, Clarence River] it was a grand sight, for the White Ibis were breeding here in scores, but not all together, a small colony here of from twenty to forty nests, and a little further away, forty or fifty yards perhaps, another colony, and many of these colonies existed. The rushes and reeds were high over our heads, but we had no difficulty in going from one colony to another, as the birds were continually dropping down with food, etc.; some of the nests contained eggs, and others young; (in September) four eggs were the most any nest contained, but were seldom seen, the usual number for a sitting being three. The nests are placed on top of the rushes, which are broken down into a platform, and are used as a foundation. Upon this is placed all kinds of aquatic herbage and plants, and some had gum stems and leaves for a lining. Some nests are quite close together, and built side by side, about a foot or eighteen inches above water, the nests containing eggs and young birds in all stages. The young ones make off as soon as they see you."†

The bird figured and described is a male (the type of *Ibis molucca alligator*), and was collected on the South Alligator River, Northern Territory, November 10th, 1902.

* Swan, *Austr. Mus. Sp. Cat.*, no. 1, Vol. IV., p. 3, 1913.

† Savidge, *ib.*

THE BIRDS OF AUSTRALIA.

In the *Novitates Zoologicae*, Vol. XVIII., p. 227, 1912, I separated the North-west Australia-Northern Territory bird from the South-east Australian form on account of its shorter bill. I have not yet been able to account for the variation of that feature, but as some Eastern specimens have also short bills, for the present I am only admitting one subspecies as inhabiting Australia, though there can be little doubt that the Northern birds do differ.

From typical birds, Australian ones can easily be separated by means of the colouring of the ornamental inner secondaries. In the latter the dark coloration is predominant, whereas in typical birds the white splashing is much more evident.

GENUS—CARPHIBIS. .

CARPHIBIS Reichenbach, Nat. Syst. Vögel., p. xiv., 1852. Type *C. spinicollis*.

PLEGADINE birds with long bills, long wings and tail, and medium legs and feet.

The bill, wings, tail, and feet are similar to those of *Threskiornis*.

The chief difference lies in the feathering of the hind-neck—this portion in *Threskiornis* being bare—and the peculiar elongated stiffened shafts on the fore-neck, while the inner secondaries are normal.

The legs and toes are shorter than in *Threskiornis*, while the tail is proportionately longer.

The culmen is about half the length of the wing, and more than twice the length of the metatarsus. In *Threskiornis* the metatarsus is more than half the length of the culmen.

The coloration is very different.

The bill in the adult male is peculiar in that the sides of the upper mandible are ornamented with regular perpendicular flake-like ridges on its basal half. In the adult female this is not so marked, while these flaky ridges are not present in the immature.

In *Threskiornis* an irregular flaking only appears, and this is not at all marked.

CARPHIBIS SPINICOLLIS.

STRAW-NECKED IBIS.

(PLATE 178.)

IBIS SPINICOLLIS Jameson, Edinb. New Philos. Journ., Vol. XIX., p. 213, 1835; banks of Murray River, New South Wales.

New Holland Ibis Latham, Gen. Hist. Birds, Vol. IX., p. 167, 1824.

Ibis spinicollis Jameson, Edinb. New Philos. Journ., Vol. XIX., p. 213, 1835; Jardine and Selby, Illustr. Ornith., n.s., Vol. IV., pl. xvii., 1837; Reichenow, Journ. für Ornith. 1877, p. 150.

Ibis lamellicollis Lafresnaye, Mag. de Zool. 1836, pl. 57 (New South Wales).

Ibis australis Jardine and Selby, Illustr. Ornith., n.s., Vol. IV., text to pl. xviii., 1837 (New South Wales).

Ibis lathamii id., ib., in synonymy: *nomen nudum*.

Geronticus spinicollis Gray, List Sp. Birds Brit. Mus., pt. iii, p. 91, 1844; Gould, Birds Austr., Vol. VI., pl. 45, 1844; Ramsay, Tab. List Austr. Birds, p. 20, 1888; North, Austr. Mus. Cat., no. 12, p. 312, 1889; Cox and Hamilton, Proc. Linn. Soc. N.S.W., Ser. II., Vol. IV., p. 420, 1889; Kwartland, Birds Melb. Distr., p. 116, 1900; Bennett, Records Austr. Mus., Vol. I., p. 119, 1891.

Carphibis spinicollis Reichenbach, Nat. Syst. Vögel., p. xiv., 1852; Gould, Handb. Birds Austr., Vol. II., p. 282, 1865; Elliot, Proc. Zool. Soc. (Lond.) 1877, p. 491; Lucas, Vict. Nat., Vol. I., p. 104, 1884; Campbell, ib., Vol. III., p. 166, 1887; Sharpe, Cat. Birds Brit. Mus., Vol. XXIV., p. 11, 1898; Kwartland, Trans. Roy. Soc. South Austr., Vol. XXII., p. 187, 1898; Campbell, Nests and Eggs Austr. Birds, p. 942, 1901; Le Souëf, Vict. Nat., Vol. XVII., p. 180, 1901; Carter, Emu, Vol. II., p. 105, 1902; id., ib., Vol. III., p. 209, 1904; "F. R.," ib., Vol. IV., p. 78, 1904; Hartert, Nov. Zool., Vol. XII., p. 203, 1905; Hall, Key Birds Austr., p. 97, 1906; Berney, Emu, Vol. VI., p. 114, 1907; Austin, ib., Vol. VII., p. 77, 1907; Mathews, Handl. Birds Austral., p. 30, 1908; Ingram, Ibis 1909, p. 615; Mathews, Emu, Vol. IX., p. 66, 1909; Ogilvie-Grant, Ibis 1910, p. 177; Littler, Handb. Birds Tasm., p. 190, 1910; North, Austr. Mus. Sp. Cat., no. 1, Vol. IV., p. 5, 1913; Mathews, List Birds Austr., p. 78, 1913.

Carphibis spinicollis spinicollis Mathews, Nov. Zool., Vol. XVIII., p. 228, 1912.

Carphibis spinicollis fitzroyi Mathews, ib. (Fitzroy River, North-west Australia).

DISTRIBUTION. Australia and Tasmania.



J.G. Keulemans, del.

Witherby & C^o.

$\frac{1}{4}$
CARPHIBIS SPINICOLLIS.
(*STRAW-NECKED IBIS*).

STRAW-NECKED IBIS.

Adult male. General colour above black with bronzy reflections and cross-bars of velvety-black, being green on the hind-neck, coppery or purple on the mantle, green and violet on the wings, and narrow green bars or edgings on the upper tail-coverts; bastard-wing, primary-coverts and quills greenish-black; tail entirely white; neck covered with white down with short metallic-green feathers on the upper side and straw-like shafts on the under side of upper fore-neck; lower fore-neck dark metallic; remainder of the under-surface pure white, including the axillaries, under tail-coverts and short concealed under wing-coverts; lesser under wing-coverts metallic-green; the greater series grey. Bill and bare skin black; iris brown; patch below the eye and feet pink. Total length 833 mm.; culmen 188, wing 382, tail 145, tarsus 88.

Adult female. Similar to the adult male, but smaller in all the measurements.

Immature male. Differs chiefly from the adult in having the head covered with blackish feathers. The neck white with dark centres to the feathers, the metallic colours of the upper-surface almost absent except on the mantle, where there are a few coppery reflections. Eyes dark brown; thighs grey, knees downward black, each scale edged with grey, the margins growing narrower towards the toes; soles light grey; claws, bill, and skin of the face black; the lower eyelid has a white crescent on its lower edge; interramal space flesh-colour.

As the bird gets older the black feathers on the head are dropped, leaving the bare skin black; the straw-like shafts on the neck become visible and the upper-surface becomes more and more as in the adult.

Nest. "Similar in construction and material to those of *Threskiornis strictipennis*, being nearly flat structures composed of long spiny sticks and twigs interlaced through one another, measuring about eighteen inches in diameter by six in length" (Bennett).

Eggs. Clutch, three to five; white, mostly nest stained, with very fine pittings; inside of shell green. Axis 62 to 68 mm., diameter 43 to 45.

Breeding-season. September to December (North).

MR. J. P. ROGERS says that he saw these birds in small flocks, both on the plains near and in the bed of the Fitzroy River, North-west Australia. But they were fairly numerous in Kimberley.

Captain Bowyer Bower, writing from Derby, notes: "On 21st June, 1886, we saw a large flock of these birds, some 30 in number, fly over the camp and make in the direction of a swamp about a mile off; going across there we observed four posted, as it were, to give warning of danger, on the highest trees; after a little stalking I got within shot of one and fired and at once all the rest rose from the damp grass. They are watchful birds and difficult to approach. This bird seems to fly easily, often soaring hawk-fashion in the air."

Captain S. A. White says: "This very useful bird is of a nomadic nature, travelling over a vast range of country, and its visits are gauged by the state of the seasons. They congregate in vast numbers and spread over the plain in search of food and are a deadly enemy of the locust or grasshopper; they retire to the big gums at night to roost and their cry is very harsh, being a deep croaking noise."

THE BIRDS OF AUSTRALIA.

Mr. Charles Belcher reports : " This bird is a visitor to Southern Victoria, though a common enough one in good seasons. It has a curious habit of soaring in small flocks at an immense height."

Mr. E. J. Christian, writing from Northern Victoria, says : " In this district they are very common, and the best friend we have, as we suffer from plagues of grasshoppers and this bird eats them all day long. In the autumn of 1907 when we had no grass we irrigated a few acres for the stud rams, but as soon as the grass came up we had the grasshoppers. They arrived one day at 7 o'clock a.m. and the Ibis at 12 o'clock. By their timely arrival and action they saved the garden.

" When flying they often use the V formation. They are very slow fliers. Before settling down the whole flock will wheel round two or three times."

Mr. Tom Carter sends me the following : " The first recorded appearance of the Straw-necked Ibis in the Gascoyne district of West Australia was in May, 1888. I was on a station on the Minilya River when flocks of these birds appeared, and both the earliest settlers (settled about 1880) and the natives said they had never seen birds like them before, except J. Brockman, who told me he had seen and shot a solitary bird a few years previously, further north.

" After the break up of the 1889-91 drought, immense numbers were to be seen all over the country, from the Gascoyne River to Point Cloates. For several weeks thousands used to roost every night on the hummocky peaks of a large drift sand hill, close behind my house at Point Cloates. It was a most interesting sight to see long strings of the birds coming in from various directions about sundown, to take up their sleeping quarters, and a great commotion of croaking and squabbling for places went on until dark. The next visitation of Ibises was in the record wet season of 1900, when they were again generally distributed through the country, but did not appear in such numbers on the coast as formerly. In October, my foreman, who was camped with sheep on my inland run, sent two native boys down the Cardabia creek with the bullock dray, to find and bring back an iron water tank that had been washed away in the previous phenomenal flood. As they were away some days he asked them on their return where they had found the tank, and they mentioned a place about eight miles from where he was camped. He then wanted to know how it was they had been away so long and in reply they told him to look inside the tank in the cart, and doing so was surprised to see about two hundred eggs. It seemed the boys had found a great colony of Straw-necked Ibis in full breeding, and they had camped in its vicinity with the intention of eating all the eggs, but, as they regretfully

STRAW-NECKED IBIS.

explained, there were too many even for their appetites—‘ Can’t finish ’em,’ as they sorrowfully said, so they brought some back in the cart as a ‘ peace offering.’

“ The foreman soon after sent word over to me at Point Cloates, about 60 miles distant, and as soon as I could leave there I drove over to visit the colony, as it was, as far as I knew, the first record of this species breeding in West Australia. Unfortunately I was rather late, and the bulk of the young birds had flown, but there were hundreds if not thousands of nests, built on low bushes flattened down by the flood, and matted with ‘ wrack ’ or debris of leaves, etc. Many other nests were built on the ground, of a flat, wide shape, made of small sticks and leaves. There was then no water within a quarter of a mile. Some of the bushes contained four or six nests interbuilt, and many of them contained addled eggs. As some young birds were still flopping about, I told my native boy to catch some, and naturally he killed all as he caught them (which I ought to have foreseen), but I managed to save two alive, which I took home. One survived and was alive when I left Point Cloates in 1902, and was a most interesting and amusing pet.

“ At first I had it tethered by a leg, and fed it on pieces of meat dropped in a damper dish filled with water. These it readily picked out, usually reversing its head while dabbling with its beak. In a few days I gave it full liberty, and it was speedily champion of all the dogs, cats, fowls and ducks, all of whom feared its long, snapping beak. Afterwards it ‘ chummed ’ in with a young kangaroo dog, and used to play hide-and-seek with it, with pieces of bone, even pulling them from out of the dog’s throat. When the dog slept, it would mount guard over it, and snap its beak at anyone approaching.

“ It readily answered to its name, ‘ Jack,’ and rarely missed a meal time, but would stand waiting for a piece of meat. If it had to wait too long it would pluck one’s hand or clothes with its beak to attract attention. Almost all food was taken to be well washed in water by it, before swallowing. At night it fed on the roof of the house upon cockroaches, mice, etc., captured from the grass laid upon the iron to make it cooler.

“ In the daytime all crevices in the verandah boards, etc., were thoroughly probed in search of centipedes, etc., and old boots were a very favourite hunting-ground, its long beak probing to the end of the toes for a stray spider or lizard.

“ In 1902 other ‘ Ibises ’ again appeared in the district, and my tame bird would feed with them for hours but never went away with them. One day an immature *Haliastur leucogaster* gave chase to it, flying after it round the house two or three times, but the Ibis easily evaded capture by its less agile pursuer.

THE BIRDS OF AUSTRALIA.

"On the 5th May, 1902, an immature female bird settled on the kitchen roof, and was captured and its wing clipped. The original bird, which had been very attentive to a Muscovy Duck, which it regularly trod (copulated) as I often saw, now paired with the new bird, and they built two or three nests of straw, etc., on a stack of wreckage timber, but some goats always ate them before completed, so they then commenced to build a nest on the ridge of the house roof, but did not complete it as I had to take them away to my shearing shed (35 miles distant) preparatory to my leaving the station, and sending the birds to the Zoo at South Perth, but most unfortunately they got swept by a heavy sea on the coaster schooner that took them away and both died on the voyage.

"Large flocks of *C. spinicollis* were about my station at Broome Hill from May, 1905, until about August. April 23rd, 1911, I saw a solitary bird at Lake Muir, which I was assured had been there nearly two years, in company with some *Notophox novæ-hollandiæ*."

"These birds were numerous along the course of the Fitzroy River, and they were found wading in many of the swamps on its margin. Occasionally large flocks were observed perched on the dead trees we passed."*

"The young would leave the nest on being approached. They then swim to neighbouring bushes, and, although they are not web-footed they swim well and high. The parents feed them by placing partially digested food in their mouths, which food consists of grasshoppers, caterpillars, fresh-water snails, etc., and if the young birds are handled much they occasionally eject the food from their stomach."†

"One could easily see their usual method of feeding, which consisted in constantly moving the bill here and there over the surface of the ground, exploring every recess between the grass tufts, apparently obtaining more insects by feeling or disturbing them, than by seeing, chasing or deliberate capture."‡

"A specimen of *Geronticus spinicollis* was shot at Montagu, Tasmania, in the last week of September, 1895, by Mr. Fitzpatrick, the Government school master, who sent it to me, and I forwarded it to the Tasmanian Museum, Hobart."§

The bird figured and described is a male, collected at Alexandra, Eastern Northern Territory, on May 9th, 1906, by the late William Stalker.

Though described by Latham in the *General History of Birds*, in 1824, this bird did not receive a scientific name until 1835, after which it was

* Keartland, *Trans. Roy. Soc. South Austr.*, Vol. XXII., p. 187, 1913.

† Le Souëf, *Vict. Nat.*, Vol. XVII., p. 181, 1901.

‡ North, *Austr. Mus. Sp. Cat.*, no. 1, Vol. IV., p. 6, 1913.

§ Holden, *ib.*, p. 9.

STRAW-NECKED IBIS.

awarded three names in three years, three authors independently describing this peculiar endemic Australian form.

I separated the North-western bird as a distinct subspecies on account of its smaller size, but I do not find this to be a constant character, though probably this is due to lack of series of adult birds. The fully-developed males of the first year appear to be smaller though not otherwise dissimilar, while younger birds have the crown of the head feathered. I suggest however that when longer series are received, the North-western species will merit reinstatement.

GENUS—PLEGADIS.

PLEGADIS Kaup, Skizz. Entwick-Gesch. Nat. Syst.,									
p. 82, 1829	..	..	..	..	..	..	Type	<i>P. falcinellus.</i>	
<i>Tantalides</i> Wagler, Isis 1832, p. 1231	..	..	..	..	..	..	Type	<i>P. falcinellus.</i>	
<i>Falcinellus</i> (not Vieillot 1816) Gray, List Genera Birds,									
2nd ed., p. 87, 1841	..	..	..	..	..	..	Type	<i>P. falcinellus.</i>	
<i>Plegadornis</i> Brehm, Naumannia 1855, p. 290	..	..	..	..	..	..	Type	<i>P. falcinellus.</i>	
<i>Egatheus</i> (not Billberg 1828) Lonnberg, Journ. für									
Ornith. 1906, p. 533	..	..	..	..	..	..	Type	<i>P. falcinellus.</i>	

PLEGADINE birds with long decurved bills, long wings, short tail, long legs and feet.

In coloration this genus is very distinct, but in general structural characters it is similar to the preceding genera, *Threskiornis* and *Carphibis*, being however at once distinguished by the nature of the metatarsal covering. In those the anterior aspect of the metatarsus is covered, similar to the posterior, with hexagonal scales: that is, the metatarsus is *reticulate throughout*. In *Plegadis* the metatarsus is regularly *scutellated* anteriorly though reticulate posteriorly.

The culmen is long and decurved, formed as in the preceding genera: it is about half the length of the wing. The head is feathered save for a bare space round the eyes and the loreal region, while a small crest is developed on the hind-neck. The wing has the second primary longest, the first and third subequal and scarcely shorter, the fourth noticeably so.

The tail is square, composed of twelve feathers, and is shorter than the culmen and less than half the length of the wing.

The legs are long, a long exposed tibia being present; the metatarsus is about as long as the tail and in front is covered with regular transverse scales, the remainder being covered with small hexagonal scales. The toes are long with small connecting webs and a long hind toe is present. The claw of the middle toe is pectinated.

This well-marked genus, differing at sight from *Threskiornis* (= *Ibis* of recent writers) in the metatarsal covering, has suffered as regards its nomination, but it is now probably settled that *Plegadis* will remain unquestioned. In the "Reference List," following Lonnberg, I used *Egatheus* Billberg, but

PLEGADIS.

my friend Dr. C. W. Richmond pointed out that this was erroneous and suggested an enquiry into the use of the generic name *Ibis*, which I have summarised under the genus-name *Threskiornis*. Since then I have examined Billberg's work and in conjunction with Iredale have published some notes in the *Austral Avian Record*, Vol. II., pp. 33-48, 1913. The reprint of the table there given shows at once the accuracy of Richmond's contention and the true position of *Egatheus* Billberg. The only other name that has threatened the use of *Plegadis* is "*Falcinellus* Bechstein, 1803." I have been no more successful than other systematists in tracing the origin of this quotation, though Illiger noted it in the synonymy of *Ibis* as early as 1811. The earliest writer to absolutely use it for this genus seems to have been Gray, in 1841: this is, of course, twelve years later than *Plegadis*, while *Falcinellus* has been used in other connections as early as 1816.

PLEGADIS FALCINELLUS PEREGRINUS.

AUSTRALIAN GLOSSY IBIS.

(PLATE 179.)*

IBIS PEREGRINA Bonaparte, Consp. Gen. Av., Vol. II., p. 159, 1855 ; Celebes.*Falcinellus igneus* (not Gmelin) Gould, Birds Austr., Vol. VI., pl. 47, 1844 ; *id.*, Handb. Birds Austr., Vol. II., p. 286, 1865 ; Diggles, Handb. Birds Austr., Vol. II., pl. 103, 1877 ; Bennett, Proc. Linn. Soc. N.S.W., Ser. II., Vol. IV., p. 1059, 1890.*Ibis peregrina* Bonaparte, Consp. Gen. Av., Vol. II., p. 159, 1855.*Ibis (Falcinellus) igneus* Ramsay, Proc. Zool. Soc. (Lond.) 1877, p. 340.*Plegadis falcinellus* Salvadori, Ornith. Papua. e Moll., Vol. III., p. 382, 1882 ; Sharpe, Cat. Birds Brit. Mus., Vol. XXVI., p. 29, 1898 ; Hall, Key Birds Austr., p. 97, 1899 ; Campbell, Nests and Eggs Austr. Birds, p. 944, 1901 ; Hartert, Nov. Zool., Vol. XII., p. 203, 1905 ; Hall, Key Birds Austr., p. 97, 1906 ; Berney, Emu, Vol. VI., p. 115, 1907 ; Mathews, Handl. Birds Austral., p. 31, 1908 ; Ingram, Ibis 1909, p. 615 ; Mathews, Emu, Vol. IX., p. 66, 1909 ; Littler, Handb. Birds Tasm., p. 191, 1910 ; Mathews, Emu, Vol. X., p. 104, 1910 ; Ogilvie-Grant, Ibis 1910, p. 177 ; North, Austr. Mus. Sp. Cat., no. 1, Vol. IV., p. 10, 1913 ; Mathews, List Birds Austr., p. 78, 1913.*Ibis falcinellus* (not Linné) Ramsay, Tab. List. Austr. Birds, p. 20, 1888 ; North, Austr. Mus. Cat., no. 12, p. 396, 1889 ; *id.*, Proc. Linn. Soc. N.S.W., Ser. II., Vol. V., p. 142, 1890,*Egatheus falcinellus* Mathews, Nov. Zool., Vol. XVIII., p. 228, 1912.

DISTRIBUTION. Australia and Tasmania (extra limital).

Adult male in summer-plumage. Glossy purplish-green ; top of head and sides of face glossy purple ; entire neck all round, lesser upper wing-coverts and under-surface of body rich maroon-chestnut ; under tail-coverts blackish ; axillaries and under wing-coverts glossy green with a purplish tinge ; bastard-wing, primary-coverts and quills glossy green ; back, wings, scapulars, long innermost secondaries, and tail glossy green with purplish reflections ; bill olive-brown, with a line across the fore-head and from the eye to the base of the lower mandible blue-grey ; eyes brown, space below the eye flesh-colour ; feet and legs leaden-brown, frontal plates of tarsus olive-brown. Total length 600 mm. ; culmen 138, wing 277, tail 102, tarsus 97.*Adult female.* Similar to the adult male, but smaller. Total length 490 mm. ; culmen 110, wing 251, tail 90, tarsus 85.*The Plate is lettered *Egatheus falcinellus*.



J.G. Keulemans, del.

Witherby & Co

$\frac{2}{5}$
EGATHEUS FALCINELLUS.
(GLOSSY IBIS).

AUSTRALIAN GLOSSY IBIS.

Adult in winter. Differs from the adult in summer by having the head and neck brown, minutely lined with white, with scarcely any green or purple reflections on the upper-parts, and by the dark brown on the under-surface.

A bird obtained in February shows the approach of the winter-plumage by the white specklings on the head and neck.

Immature. Differs from the adult by the absence of the glossy purple on the head and sides of face, as well as the maroon-chestnut on the neck, lesser upper wing-coverts and the entire under-surface—the colour on these parts being replaced by white speckling on the head and neck; under-parts rusty-brown, and the outer edge of the wing pale brown.

Nest. “Placed in an upright three-pronged fork and was entirely composed of branches of box (*Eucalyptus*) leaves, built up to about a foot in height, slightly hollowed on the top, and without any lining beyond the leaves of which it was composed” (Bennett).

Eggs. “Clutch three, lengthened ovals in form and are of a deep greenish-blue colour, the shell being slightly rough in texture and lustreless. Axis, 49 to 50 mm.; diameter, 34-33.” (North.)

Breeding-season. October and November (Bennett), September to December (North).

MR. J. P. ROGERS, who shot this bird in North-west Australia, writes: “Several flocks have been in this locality for a few days; they feed in large numbers in the swamp during the day, and roost in the trees bordering the swamp at night.”

Captain S. A. White says this bird is a rare one in South Australia and he has never heard of it breeding there.

Mr. Charles Belcher tells me this bird is an exceedingly rare visitor to Victoria; he noticed a flock of about thirty on the Racecourse near Geelong some years ago.

“The Glossy Ibis breeds in trees over the creek [at Cunnamulla, South-western Queensland], but do not always build a nest for themselves. I have known them to use the old nest of the White-fronted Heron, also the Spoonbill, but all I have taken have been on a branch overhanging the water, and not at all easy to get, only by scooping them out. There are plenty of birds here, but I do not get many nests, only three or four a season.”*

“I will premise my remarks by stating that the present year (1889) in this part of the country [Lower Lachlan] has been an unprecedentedly wet one, surpassing in this respect the far famed 1870.

“Wishing to obtain some spoonbill and herons’ eggs I visited this place [Yandenbah] on the 22nd of October, and swam into the part of the hollow where the heronry is situated. Whilst swimming about I noticed a glossy ibis fly off a nest on the branch of a tree, some eight or ten feet above the water, but having no idea that this bird bred here, I did not take much notice

* Robinson, *Austr. Mus. Sp. Cat.*, no. 1, Vol. IV., p. 11, 1913.

THE BIRDS OF AUSTRALIA.

of the circumstance, thinking that the bird was merely perched there; but remarked that the nest appeared recently constructed and differed entirely from the scores of nests of many species of birds surrounding me.

“After obtaining a number of spoonbills’ and other eggs, I was returning to land, and in doing so again passed the same tree, and the Ibis again flew off the nest. This aroused my interest, and I at once swam to and ascended the tree, and found that the nest contained one egg of a beautiful greenish colour, somewhat resembling that of *Ardea novæ-hollandiæ*, but much brighter; this egg I took, but unfortunately broke it whilst returning to land. The nest was placed in an upright three-pronged fork of a small tree, and was entirely composed of branches of box (*Eucalyptus*) leaves, built up to about a foot in height, slightly hollow at the top, and without any lining beyond the leaves of which it was composed.

“Thinking it probable that I might find other nests of this bird in this large and secluded swamp or lake, I again visited it on the 2nd of the present month (November) and when swimming up to the tree from which I had taken the egg on my previous visit, I saw the Ibis, to my surprise and gratification, again fly off the nest, which on examination contained three beautiful eggs. A further search amongst the thickly growing trees resulted in the discovery of another nest which also contained three eggs, but these were so much larger than the previous ones that had I not seen the bird on, and fly off the nest, I should have considered them as belonging to some other species; but there is no possible doubt as to their identity, for, owing to incubation having begun the bird was very reluctant to leave the nest, and let me approach almost to arm’s length before she did so. This nest was exactly similar to the preceding one in material and structure, and placed in a similar position.”*

The bird figured and described is a female, collected at Parry’s Creek, North-west Australia, on February 16th, 1909, by Mr. J. P. Rogers.

In the American Ornithological Union’s *Checklist*, 3rd edition, 1910, p. 92, the species-name used for this bird is *autumnalis*, the prime reference being given as “*Tringa autumnalis* Linnæus in Hasselquist, Reise Paläst 1762, p. 306.”

I do not use this name as the book was written before Linné introduced his binomial system in 1758, viz. 1757, and the 1762 edition is simply a reprint of that pre-Linnean (an adjective used in the systematic sense, in this case of a book written by Linné himself) work. In the 10th edition of the *Systema Naturæ*, prepared by Linné and published in 1758, he did not make use of the names he had proposed in the Hasselquist work. In the

* Bennett, *Proc. Linn Soc. N.S.W.*, Ser. II., Vol. IV., p. 1059, 1890.

AUSTRALIAN GLOSSY IBIS.

12th edition, Linné included this bird under the name *Tantalus falcinellus* (p. 241), the habitat given being "Austria, Italia."

In the *Catalogue* of the Birds in the British Museum no subspecies are recognised, while its range is almost world-wide.

At various times forms have been separated, but owing to the variation expressed in the plumage changes these have just been as regularly suppressed.

In the *Hand-List of British Birds*, by Hartert, Jourdain, Ticehurst, and Witherby, 1912, p. 122, the range is given "east to Central Asia and India . . . Northern birds are migratory, wintering in . . . tropical Asia, and casually even Australia." It, however, is not a very uncommon visitor to Australia, and, moreover, often, if not regularly, breeds in that country.

I am using for these Australian birds the name given by Bonaparte (ex Müller MS.) to a Celebes bird.

European birds in full plumage have the top of the head glossy green; in another state, which cannot be exactly determined owing to the lack of extensive series of specimens, the head loses the deep glossy green and a dull purple is observed.

All the Australian specimens yet examined, including Celebes skins, have the head deep purple without any green gloss, otherwise in perfect breeding-plumage. The back of the head, hind-neck, and upper-back are also of a deeper colour, while less of the purple is seen in the back-coloration. Longer series need to be studied before the subspecies of this bird can be accurately determined; but the one fact known is, that all Australian birds differ from European specimens, and for this reason I use Bonaparte's name.

GENUS—SPATHERODIA.

SPATHERODIA Reichenbach, Nat. Syst. Vögel., p. xvi.,

1852 Type *S. regia*.

PLATALEINE birds with the top of the head bare and warty, the nape crested, long plateleine bills, long necks and wings, short tail, very long legs and long toes. The bill is characteristic of the family, being long, flattened, and narrowing in the middle, broadens out into a spoon-shaped end with a short decurved tip: the nostrils are elongated ovals, placed near together near the base of the bill in a shallow groove which becomes obsolete at the beginning of the contraction but which continues as a linear channel parallel to the edge of the mandible to the end.

The nape bears a full crest in breeding-plumage, while the top of the head becomes denuded of feathers and bears warty excrescences. This bare portion extends in a line beyond the eyes down to the upper-throat, that and the chin being also bare. The wing has the second primary longest, the third longer than the first, which is about equal to the fourth; it is less than twice the length of the culmen though much more than twice the metatarsal length. The tail is short and square, composed of twelve feathers: shorter than the metatarsus and only about one-third the length of the wing.

The legs are very long with a long exposed tibia; the metatarsus is regularly covered with hexagonal scales both in front and behind; the toes are long and a long hind toe is present.

In the *Catalogue* of the Birds in the British Museum, Vol. XXVI., the family *Plataleidae* is divided into three genera, *Platalea*, *Platibis*, and *Ajaja*.

In the foremost was placed the present species, the genus *Spaththerodia* being suppressed. If the species be compared with the type of *Platalea*, it is at once seen to differ quite as much from that as the type of *Ajaja* does from it. The bare head and neck of *Ajaja* is simply an extension of the bare top of the head of *Spaththerodia*, while the warty markings of *Spaththerodia* are more distinctive. The rejection of *Spaththerodia* would necessitate the non-acceptance of *Ajaja*, yet the latter genus has been utilized by all recent genus-lumpers. The differences seen are however of more importance in these large, little differentiated forms than much more apparent alterations observed in Passerine birds which are commonly recognised as of generic rank.

SPATHERODIA.

If the young of *Spathерodia*, *Ajaja*, and *Platalea* be compared, they will be seen to be almost identical in bill-characters and in the feathering of the head and neck. The conclusion that might be arrived at, and moreover one which will probably be confirmed by anatomical investigation, is that these three forms are components of a phylogenetic genus and that they are recognisable as of subgeneric rank. At the present time subgenera are widely regarded as genera, and consequently I must use *Spathерodia* as such while carefully noting that it must be regarded as of equal value with *Ajaja*.

SPATHERODIA REGIA.

BLACK-BILLED SPOONBILL.

(PLATE 180.)*

PLATALEA REGIA Gould, Synops. Birds Austr., pt. iv., App., p. 7, 1838; New South Wales.

Platalea regia Gould, Synops. Birds Austr., pt. iv., App., p. 7, 1838; *id.*, Birds Austr., Vol. VI., pl. 50, 1842; *id.*, Handb. Birds Austr., Vol. II., p. 287, 1865; Buller, Trans. New Zeal. Inst. 1876, Vol. IX., p. 337, 1877; *id.*, Trans. New Zeal. Inst. 1895, Vol. XXVIII., p. 349, 1896; Sharpe, Cat. Birds Brit. Mus., Vol. XXVI., p. 47, 1898; Campbell, Nests and Eggs Austr. Birds, p. 946, 1901; Le Souëf, Emu, Vol. II., p. 95, 1902; Carter, *ib.*, Vol. III., p. 210, 1904; Hartert, Nov. Zool., Vol. XII., p. 203, 1905; Hall, Key Birds Austr., p. 97, 1906; Iredale, Trans. New Zeal. Inst. 1906, Vol. XXXIX., p. 137, 1907; Berney, Emu, Vol. VI., p. 115, 1907; Mathews, Handl. Birds Austral., p. 31, 1908; Ingram, Ibis 1909, p. 615; Mathews, Emu, Vol. IX., p. 66, 1909; *id.*, *ib.*, Vol. X., p. 104, 1910; North, Austr. Mus. Sp. Cat., no. 1, Vol. IV., p. 12, 1913.

Spaththerodia melanorhynchus Reichenbach, Nat. Syst. Vögel., p. xvi., 1852 (New South Wales).

Spaththerodia regia Bonaparte, Comptes Rendus Sci. (Paris), Vol. XL., p. 724, 1855; Mathews, List Birds Austr., p. 78, 1913.

Platalea melanorhynchus Bonaparte, Consp. Gen. Av., Vol. II., p. 148, 1855; Ramsay, Tab. List Austr. Birds, p. 20, 1888; Buller, Birds New Zeal., 2nd. ed., Vol. II., p. 144, 1888; Ogilvie-Grant, Ibis 1889, p. 48; Cox and Hamilton, Proc. Linn. Soc. N.S.W., Ser. II., Vol. IV., p. 420, 1889; North, *ib.*, Vol. X., p. 218, 1895.

Platalea regia regia Mathews, Nov. Zool., Vol. XVIII., p. 228, 1912.

Platalea regia stalkerii Mathews, *ib.*, p. 229 (Northern Territory).

DISTRIBUTION. Australia generally (except the South-west?).

Adult male, in breeding-plumage. General colour white, both above and below, with a white nuchal crest; bill black, the patch on the fore-head and above each eye orange-colour; iris dark red; feet black. Total length 860 mm.; culmen 220, wing 356, tail 113, tarsus 129.

Adult male, in winter-plumage. Differs from the summer-dress only by the absence of the nuchal crest.

Adult female. Similar to the adult male but smaller.

* The Plate is lettered *Platalea regia*.



H. Grönvold, del

W. L. L. L.

5
PLATALEA REGIA.
(BLACK-BILLED SPOONBILL.)

BLACK-BILLED SPOONBILL.

Immature bird differs from the adult chiefly in having the two outer primary-quills brown on the outer-webs and all the primaries more or less brown at the tips, the third and fourth quills are brown on the outer web at the base; outer webs of bastard-wing and primary-coverts, with their shafts, also brown; the shafts of both the primary- and secondary-quills conspicuously black; distal half of bill brown; lores, orbits, forehead and rest of bill black; gular pouch leaden-brown; tarsi and feet black. Younger specimens have the head feathered.

Nest. "A flat structure, composed of broken down reeds and twigs, measuring two feet across, placed about three feet above the water" (Evered).

Eggs. Clutch, three or four; chalky-white, with blotches of reddish-brown; axis 66-70 mm., diameter 42-44.

Breeding-season. October to April; December (Evered, New South Wales); March (Kearland, Daly River, Northern Territory); October (Carter, North West Cape); April (Jackson, North Queensland).

MR. J. P. ROGERS found these birds in company with *Platibis flavipes* on the Fitzroy River in North-west Australia. They were far from common and much more wild than the next species; they were also found on Melville Island.

Mr. Tom Carter found them breeding near the North West Cape, in West Australia, in October, 1900.

Captain S. A. White says: "A few of these birds are distributed over the rivers and lakes of South Australia, but they are never seen in great numbers, and are often found in company with *Platibis flavipes*. They seem to live on frogs, aquatic insects, and small shell-fish.

"They keep close to the Pelicans if there are any about, and this wary bird sees danger a long way off and shows uneasiness, then the Spoonbills are off to safer grounds. They are seen on Lake Albert with crests in July. The red spot on the top of the head where the feathers meet the black bare skin, and the yellow spots over the eyes, are very distinct. When feeding they thrust their bills down into the mud and water, swinging their heads from side to side as they walk along, by so doing they searched all the water and mud for the space of several feet on either side of them."

The late Captain Bowyer Bower writing from Derby says: "They walk quietly through the water with the bill a little more than half under, and at each step sway from side to side. The mandibles are for the majority of the time kept a little open. Their flight seems heavy, particularly when turning. They are fairly silent. The wind-pipe runs the length of the sternum and turns and then goes forward before entering the lungs. Irides scarlet; bill slate-coloured, mottled with black as far as the nostrils, above which it is black, lower mandible black at the base, slate-coloured at the point; the naked skin of the face and throat black, except a superciliary stripe over each eye and a triangular mark on the top of the head, between

THE BIRDS OF AUSTRALIA.

the eyes, the former marks being bright yellow and the latter blood-red ; feet and legs black."

The bird figured and described is a male, collected by the late William Stalker, in Alexandra, Northern Territory, on July 9th, 1906.

No complications as regards the nomination of the species occur, save that Reichenbach, when he proposed *Spatherodia*, utilised his own specific name *melanorhynchus*, which he stated he had proposed in manuscript many years before.

I separated the Northern form subspecifically, but in this present work I am regarding all the birds as constituting one species without any subspecies determinable with the present material. There can be little doubt however that the birds do slightly differ, and it will be noted that different observers vary the coloration of the bare parts.

GENUS—P L A T I B I S .

PLATIBIS Bonaparte, Comptes Rendus Sci. (Paris),

Vol. XL., p. 724, 1855 Type *P. flavipes*.

Also spelt *Plateibis* Bonaparte, Consp. Gen. Av., Vol. II., p. 149, 1855.

PLATALEINE birds with the top of the head feathered, but no crest; other characters as in *Spatherodia*.

The bill differs somewhat in construction: the nostrils are more linear and the groove is less marked, the linear channel much less pronounced and nearer to the edge of the upper mandible.

The top of the head is fully feathered but the loreal region and round the eye is bare as is also the chin and throat.

The wing-formula is the same as in *Spatherodia*, but the wing is about twice the culmen-length, while the tail is comparatively longer than in *Spatherodia*.

The metatarsus is less than one-third the length of the wing, whereas in *Spatherodia* it is more.

PLATIBIS FLAVIPES.

YELLOW-BILLED SPOONBILL.

(PLATE 181.)

PLATALEA FLAVIPES Gould, Synops. Birds Austr., pt. iv., App., p. 7, 1838; New South Wales.

Platalea flavipes Gould, Synops. Birds Austr., pt. iv., App., p. 7, 1838; *id.*, Birds Austr., Vol. VI., pl. 49, 1842; Ramsay, Proc. Linn. Soc. N.S.W., Vol. VII., p. 54, 1882; Bennett, *ib.*, p. 324; Ramsay, Tab. List Austr. Birds, p. 20, 1888; North, Birds County Cumberl., p. 102, 1898.

Plateibis flavipes Bonaparte, Consp. Gen. Av., Vol. II., p. 149, 1855.

Platibis flavipes id., Comptes Rendus Sci. (Paris), Vol. XL., p. 724, 1855; Gould, Handb. Birds Austr., Vol. II., p. 288, 1865; North, Austr. Mus. Cat., no. 12, p. 313, 1889; Sharpe, Cat. Birds Brit. Mus., Vol. XXVI., p. 51, 1898; Kearland, Trans. Roy. Soc. South Austr., Vol. XXII., p. 187, 1898; Hall, Key Birds Austr., p. 97, 1899; Campbell, Nests and Eggs Austr. Birds, p. 948, 1901; Le Souëf, Emu, Vol. II., p. 157, 1903; Hall, Key Birds Austr., p. 97, 1906; Ingram, Ibis 1907, p. 394; Berney, Emu, Vol. VI., p. 115, 1907; Mathews, Handl. Birds Austral., p. 31, 1908; North, Austr. Mus. Sp. Cat., no. 1, Vol. IV., p. 14, 1913; Mathews, List Birds Austr., p. 79, 1913.

Spathierodia flavipes "Reich." Bonaparte, Consp. Gen. Av., Vol. II., p. 149, 1855.

Platalea flavipes flavipes Mathews, Nov. Zool., Vol. XVIII., p. 229, 1912.

Platalea flavipes whitei Mathews, *ib.* (Northern Territory).

DISTRIBUTION. Australia (except the South-west?).

Adult male, in breeding-plumage. General colour, both above and below, white; the five innermost secondaries have black shafts two of which have disintegrated black outer webs; there are white ornamental lanceolate feathers on the fore-neck. Bill and feet pale yellow; bare skin flesh-colour; iris white. A narrow black line skirts the feathers on the fore-head, sides of face and chin. Total length 865 mm.; culmen 190, wing 382, tail 137, tarsus 115.

Adult female. Similar to the adult male.

Immature birds differ from the adults in having the shafts and tips of most of the primaries and secondaries black. The three innermost secondaries are brown at the tips on the outer webs, but not disintegrated. The ornamental feathers on the fore-neck only slightly developed.



J.G. Keulemans, del.

Witherby & Co

$\frac{1}{4}$
PLATIBIS FLAVIPES.
(YELLOW-LEGGED SPOONBILL).

YELLOW-BILLED SPOONBILL.

As the bird advances in age the primary- and secondary-quills become pure white, and the three innermost secondaries begin to disintegrate on the black portion of the outer webs. The ornamental plumes on the fore-neck also develop at the same time.

Nest. "Large structures of sticks, loosely interlaced, with a considerable depression lined with the soft fibre of decayed bark" (Bennett).

Eggs. Clutch, three to four; slightly glossy-white but nest-stained; axis 68 mm., diameter 45.

Breeding-season. September to January; September (Savage, New South Wales); October (Bennett, New South Wales); October (Campbell, Victoria); November (North, New South Wales); January (Bennett, New South Wales).

MR. J. P. ROGERS reports that this is the common Spoonbill in Kimberley, North-west Australia.

Mr. Tom Carter sends me this note: "On the 8th September, 1911, at the Minilya River, I shot a pair of these fine birds. They were feeding in company with *Geronticus spinicollis* at a large shallow fresh-water pool. I noticed that when the birds were viewed, flying, at a certain angle, their beaks seemed to curve downwards like that of the Ibis, and upon first seeing them I took them to be White Ibis."

Captain S. A. White says: "This is a very widely distributed bird, and is to be met with from two to small companies of ten or a dozen on coastal waters. It is a very wary bird and hard to approach, for when it is not feeding it perches on the top of some dead tree, from which it can get a good view of the country round. They feed on shallow lakes or swamps, where they can wade amongst the aquatic vegetation, etc. When alive a delicate pink tinge pervades the under part of the feathers, predominating under the wings, where it shades into bluish-pink."

"An irregular visitor that may be expected to put in an appearance in small parties, up to thirty individuals, at any season of the year. They feed day and night. I have watched them on a moonlight night at very close quarters."*

"On the 26th November, 1889 [on Yandembah, Lochlan District], I had numerous opportunities of observing the old Spoonbills feeding their young. It is done in the reverse way to the generality of birds. Instead of the old one putting her bill into the opened one of the young bird, the latter thrusts its bill between that of the parent, who pumps the food into the young one's mouth. The bill of the young bird is very much bent at the top, possibly to facilitate feeding in this extraordinary way."†

* Berney, *Emu*, Vol. VI., p. 115, 1907.

† Bennett, *Austr. Mus. Sp. Cat.*, no. 1, Vol. IV., p. 17, 1913.

THE BIRDS OF AUSTRALIA.

"On 4th November, 1900, I went . . . to a dam . . . near Hamilton [Victoria] . . . A large spreading Red Gum tree, standing in about three feet of water, contained the larger number of nests of the Shags and Spoonbills . . . The tree [was] simply covered in nests, from top to the lowest branches and along each limb, every place that could possibly support a nest was occupied. The large stick-made structures of the Spoonbill, forty or fifty in number, were well whitewashed by the excreta of the birds, as indeed was the whole tree, most of them containing well-feathered young birds, several of which climbed out to the end of the limb on which their nests were placed, and flew off to perch on another tree, or else drop into the water and slowly swim to the nearest land. Other nests contained partially-incubated or fresh eggs, the usual clutch being four, several containing three. The pure white eggs were quite fresh, some, however, were stained with the yolk of an egg which had been broken. The yolk is a very rich red, the stain not being easily removed; it has also a strong odour when fresh, and an appalling one when rotten . . . By the time the young Spoonbills are fledged the nest has generally been trodden into a flat platform of sticks hardly large enough to hold them."*

I described the bird from the Northern Territory as a subspecies, "*whitei*," but for the present will consider Australia as having only one species, and the birds from North Queensland, Northern Territory, and North-west Australia are included with those from the rest of Australia.

The bird figured and described is a female, collected by the late William Stalker in Alexandria, Northern Territory, July, 1905.

* Macgillivray, *Austr. Mus. Sp. Cat.*, no. 1, Vol. IV., p. 17, 1913.

GENUS—XENORHYNCHUS.

XENORHYNCHUS Bonaparte, Consp. Gen. Av., Vol. II.,

p. 106, 1855 Type *X. asiaticus*.

CICONINE birds with very long bills, long necks and wings, short tail, very long legs, and long exposed tibia, with small feet.

The culmen is very long, straight, the upper mandibular ridge scarcely upturned. The bill is very compressed laterally and strongly keeled; the under mandible is distinctly upcurved, no gonydeal angle being present, but a long upward sloping curve is observed instead.

The nostrils are linear slits placed near the base of the culmen in the upper half of the mandible; no groove is present, but a ridge runs from the upper edge of the nostril along the mandible, becoming obsolete about two-thirds the length of the culmen. No grooving occurs on the sides of the lower mandible.

The head is fully feathered; no crest developed. The wing is long and has the third primary longest; the second and fourth are subequal; the first shorter than the fifth. It is about twice the length of the culmen, which is equal to the metatarsus and longer than the tail.

The tail is short and slightly rounded, composed of twelve feathers; the under tail-coverts equal in length. The legs and exposed tibia are very long; the metatarsus is very long, and covered with hexagonal scales. The toes are comparatively very short, being less than one-third the length of the metatarsus; a small connecting web is present, as is also a hind toe.

XENORHYNCHUS ASIATICUS AUSTRALIS.

BLACK-NECKED STORK.

(PLATE 182.)*

MYCTERIA AUSTRALIS Shaw, Trans. Linn. Soc. (Lond.), Vol. V., p. 34, 1800 ; New South Wales.

Mycteria australis Shaw, Trans. Linn. Soc. (Lond.), Vol. V., p. 23, 1800 ; Shaw and Nodder, Nat. Miscel., Vol. XV., pl. 601, 1803 ; Gould, Birds Austr., Vol. VI., pl. 51, 1847 ; Bennett, Gath. Naturalist, p. 195, 1860, pl. 1. ; Diggles, Handb. Birds Austr., pl. 104, 1877.

Ciconia australis Temminck et Laugier, Planch. Col. d'Ois., Vol. III., text to pl. 300, 1824.

Ciconia leucoptera Wagler, Syst. Av., Ciconia, p. 138, sp. 6, 1827 (New South Wales).

Xenorhynchus australis Bonaparte, Consp. Gen. Av., Vol. II., p. 106, 1855 ; Gould, Handb. Birds Austr., Vol. II., p. 293, 1865 ; North, Proc. Linn. Soc. N.S.W., Ser. II., Vol. II., p. 987, 1888 ; *id.*, Austr. Mus. Cat., no. 12, p. 315, 1889 ; Keartland, Trans. Roy. Soc. South Austr., Vol. XXII., p. 188, 1898.

Xenorhynchus asiaticus (not Latham) White, Proc. Roy. Soc. Queensland, Vol. III., p. 136, 1886 ; Ramsay, Tab. List Austr. Birds, p. 20, 1888 ; Sharpe, Cat. Birds Brit. Mus., XXVI., p. 310, 1898 (pars) ; Campbell, Nests and Eggs Austr. Birds, p. 969, 1901 ; Le Souëf, Emu, Vol. II., p. 95, 1902 ; Hartert, Nov. Zool., Vol. XII., p. 203, 1905 ; Hall, Key Birds Austr., p. 100, 1906 ; Sharpe, Hist. Coll. Brit. Mus., Birds, p. 146, 1906 ; Berney, Emu, Vol. VI., p. 155, 1907 ; Hall and Rogers, *ib.*, Vol. VII., p. 141, 1908 ; Mathews, Handl. Birds Austral., p. 31, 1908 ; Cornwall, Emu, Vol. VIII., p. 141, pl. 12, 1909 ; Barnard, *ib.*, Vol. XI., p. 20, 1911 ; North, Austr. Mus. Sp. Cat., no. 1, Vol. IV., p. 47, 1913.

Xenorhynchus asiaticus australis Mathews, Nov. Zool., Vol. XVIII., p. 229, 1912 ; *id.*, List Birds Austr., p. 79, 1913.

Xenorhynchus asiaticus rogersi Mathews, Nov. Zool., Vol. XVIII., p. 229, 1912 (Fitzroy River, North-west Australia).

DISTRIBUTION. Victoria ; New South Wales ; Queensland ; Northern Territory ; North-west Australia.

Adult male. Lower hind-neck, entire back, lesser upper wing-coverts, primary- and secondary-quills white, like the breast, abdomen, under tail-coverts, axillaries, and lesser under wing-coverts ; median and greater upper wing-coverts greenish-black, as also the outer web of the outer primary-coverts and the major coverts

* The Plate is lettered *Mycteria australis*.



J.G. Keulemans del

Wittmerby & Co

$\frac{1}{5}$
MYCTERIA AUSTRALIS.
(JABIRU).

BLACK-NECKED STORK.

on the under-wing ; the long innermost secondaries bronze-brown ; hinder-crown and nape bronze-purple ; fore-part of head, sides of face, and entire neck all round bottle-green ; tail green with faint coppery edges ; irides fine yellow, eyelash black ; bill black, inside of the mouth salmon-colour deeper towards the front, the skin between the fork of the lower mandible black, irregularly marked with red, giving it somewhat the appearance of cuts ; legs and feet coral-red. Total length 1,400 mm. ; culmen 320, wing 573, tail 200, tarsus 323.

Young, one year old. Differs from the adult in having the entire head and neck dusky brown as also a patch on the rump ; lesser upper wing-coverts, primary- and secondary-quills brown, instead of white as in the adult ; under wing-coverts greyish-brown and white ; bill black ; irides brown ; legs and feet olive-brown.

Immature, second year. Differs from the young in having attained the bottle-green on the head and neck, and chiefly from the adult in retaining the dark-greenish feathers on the mantle and lesser upper wing-coverts, both of which are fringed with grey, these parts being pure white in the adult. The primary- and secondary-quills are brown, as in the young bird.

Immature, third year. Has the head and neck as in the adult, but the lower hind-neck and mantle with splotches of brown, and retains the brown primaries like the second-year bird ; the secondaries are white like the adult, with the exception of the tips which are greyish-brown.

This bird is heavy in moult (June).

The fully adult-plumage is not attained until the fourth year.

Nest. "A pile of sticks about three feet in depth and four in diameter, a thin layer of grass or rushes is placed upon the sticks, and upon this surface which is almost perfectly flat the eggs (two in number) are laid" (White).

Eggs. Clutch, two to four ; whitish ; axis 70-76 mm., diameter 51-56.

Breeding-season. May-June (Le Souëf, Northern Territory) ; August to April (Campbell) ; April (Macgillivray, Queensland) ; March (White, Queensland).

MR. J. P. ROGERS found individuals of this species more or less solitary in the North-west of Australia, and when a young bird approached an adult that was fishing, the old bird rushed across to where it alighted and drove it away. They fish in the forenoon about 10 o'clock. They also eat carrion, as a young bird was shot feeding on the remains of a dead kangaroo : a small piece of the kangaroo's intestines was found in the bird's stomach. On June 5th, 1910, a pair came to fish in the Fitzroy River, in the shallow part where the water runs over a sand-bar. When large fish came they flapped about and struck hard at them, the noise of the snap of the bills if they missed could be heard 150 yards off, their bills being almost under water. Several fish escaped into the drift-wood : one bird probed the rubbish till a fish swam away. In one out of three times the fish was caught. There was nothing sedate about these birds. Seen from a distance they use their beak as a spear and at times the head was driven right under water.

The late Captain Bowyer Bower, writing on June 23rd, 1886, from Derby, North-west Australia, says : "An adult female measured from tip to tip of the wing 6 feet 8 inches ; from the tip of the bill to the tip of the tail 4 feet 2½ ; from the tip of the bill to the end of the toes

THE BIRDS OF AUSTRALIA.

5 feet $5\frac{1}{2}$; weight nine pounds. When fishing they catch fair-sized ones from 5 to 7 inches long, those that were lengthways soon were swallowed, those that got across the mandibles required more care and by opening and closing the bill and by sundry jerks they would be placed head first and then swallowed. During the intervals the bird would walk about, quietly, but when anything caught its eye it would indulge in a short run and then stop suddenly. When flying, the head, neck, and legs were stretched out to their full extent. They are a silent bird and their flight is slow and graceful; taking from four to a dozen flaps, it holds its wings out and sails for a short time. It rises from the water without difficulty, and mounts high in a series of circles, but of not such size as one would expect."

Mr. F. L. Berney says the species comes to the Richmond district of North Queensland in the summer months, usually a few solitary birds, never more than two.

"While pursuing the fish it presents an extraordinary sight jumping along with great strides and assisting itself with its wings. It was repeatedly 'jabbing' at the fish with its huge bill, and which it captured only after many attempts. It was far from a graceful performance."*

"The Jabiru is very graceful; its attitudes and bearings, whether in a state of repose, walking rapidly, or stalking gently over a lawn or yard with its measured, noiseless steps, have a combination of grace and elegance, and it displays an independence of manner well suited to a bird so wild and roaming in its habits . . . Although, when first seen, it has an uncouth appearance from the large size of the mandibles in proportion to the body, yet, on a closer acquaintance, its manner wins upon you, and a feeling of attachment arises towards it . . . It sometimes stands quite erect, or on one leg, with the other thrown out, or rests upon the tarsi like the Emu and Mooruk, and again upon one leg, with the bill inclined upon the breast . . . When the food is hard or gristly it is rejected and bruised with the point of the beak until it becomes sufficiently soft to be swallowed. It feeds generally in the mornings and evenings, and although the mandibles look so unwieldly, it picks up the smallest object with great readiness, and clatters them together with a loud noise when catching flies. It preens its feathers and removes any dirt or insects from them very neatly and gracefully by means of its bill . . . The Jabiru is partial to salt-water creeks and lagoons. It is usually seen in such localities on the Hunter, Macleay and Clarence Rivers, which consist, near the entrance and for some miles inland, of salt water with numerous sand-banks, where these birds may be occasionally observed busily engaged in fishing. The Jabiru was occasionally observed lying upon

* Rogers, *Emu*, Vol. VII., p. 141, 1908.

BLACK-NECKED STORK.

its breast with its legs doubled up underneath. I have noticed him watch the ground very attentively under the trees, and then dart his bill into the earth and bring up larvae, which I found were those of Locusts.”*

The eggs of the bird were first brought before the scientific world by Mr. W. T. White, in the *Proceedings* of the Royal Society of Queensland, Vol. III., p. 139, 1886. He also records that both birds take part in incubation.

The bird figured and described is a male, collected on the Fitzroy River, North-west Australia, by Mr. J. T. Tunney, in 1898.

Though Shaw described the Australian bird as long ago as 1800, it has recently been united to the Indian species which had been described in 1790.

Ramsay appears to have been one of the first to suggest this confusion, but upon comparison the birds are clearly subspecifically distinct. If the previous writers' descriptions be examined, this difference will be seen to have been noted by all.

The description of the coloration of the neck given by Sharpe in the *Catalogue* of the Birds in the British Museum, Vol. XXVI., p. 310, 1898, reads, “metallic bluish green, rather more purple on the neck.” This is not applicable to the Australian bird, as no purple is observable and the blue is missing, the neck-coloration being practically a pure green with metallic reflections. I have called it “bottle-green.” I also describe the “hinder-crown and nape bronze-purple”: in the Indian bird a much larger patch is seen and the coloration is better defined as “deep maroon.”

I separated the North-western bird on account of its smaller size, but in accordance with the conservative views I am adopting in the present place, I am lumping the whole of the Australian birds until larger series become available.

* Bennett, *Gath. Naturalist*, p. 196 etc., 1860.

GENUS—A R D E A .

ARDEA Linné, Syst. Nat., 10th ed., p. 141, 1758 Type *A. cinerea*.

ARDEINE birds with long, straight bills, long necks, long wings and tail, and very long legs.

The bill is much longer than the head, sharp-pointed, deep, and laterally compressed; edges of upper mandible serrated towards tip where a small notch can be observed. The nostrils appear as linear slits placed near the base of the bill at about half the depth of the upper mandible: they are placed in a depression which soon becomes obsolete; below the nostrils, the upper mandible is slightly expanded.

The sides of the lower mandible are marked by a long shallow depression; the gonydeal angle is marked as an obtuse angle. The culmen is less than one-third the length of the wing and decidedly shorter than the tarsus. The head is crested, while the loreal region is denuded of feathers; the feathers of the back are not developed into a train, while the fore-neck feathers, though long, do not disintegrate.

The wing is long: the first five feathers almost of equal length, the third longest, the second and fourth a little shorter, the first and fifth nearly equalling these, the first being longer than the fifth; the first primary is strongly notched on the inner web, the second and third also showing distinct notching; the wing is more than twice the length of the tail and about three times the metatarsal length.

The tail is square and composed of twelve feathers, and longer than the culmen and also the metatarsus.

The legs are very long, a very long exposed tibia being present; the covering is scutellate plates in front and hexagonal plates behind; the frontal covering however generally appears more as irregular reticulation, the transverse plates showing a strong tendency to break up. In the juveniles the plates are perfectly seen. The toes are long; a long hind-toe is present which is on the same plane as the other toes; between the outer and middle toe a basal web is developed, but this is obsolete between the middle and inner toe. The middle-claw bears pectinations.

ARDEA.

The Ardeine birds forming the family *Ardeidæ* are easily recognised by the general features given in the above description: many genera are accepted, differing in the proportions of their structure and in the presence or absence of ornaments and also to a less degree in coloration.

One of the noticeable characters of the group is the presence of powder-down patches: in the Herons three pairs of these can be observed while the Bitterns possess two.

ARDEA CINEREA RECTIROSTRIS.

EASTERN GREY HERON.

(PLATE 183.)

ARDEA RECTIROSTRIS Gould, Proc. Zool. Soc. (Lond.) 1843, p. 22; New South Wales, (= India ?)

Ardea rectirostris Gould, Proc. Zool. Soc. (Lond.) 1843, p. 22.

Ardea leucophæa *id.*, *ib.* 1848, p. 58 (India); *id.*, Birds Austr., Vol. VI., pl. 55, 1848.

Ardea cinerea (not Linné) Schrenck, Vögels des Amur-Landes, p. 434, 1860; Radde, Reisen Suden von Ost-Sibir., p. 343, 1863; Jerdon, Birds of India, Vol. III., p. 741, 1864; Gould, Handb. Birds Austr., Vol. II., p. 295, 1865; Prjevalsky, Rowley's Miscel., Vol. III., p. 48, 1878; Ramsay, Tab. List Austr. Birds, p. 21, 1888; Taczanowski, Mém. l'Acad. Imp. Sci. St. Petersb., Ser. VII., Vol. XXXIX., p. 980, 1893; Sharpe, Cat. Birds Brit. Mus., Vol. XXVI., p. 74, 1898 (pars); Buller, Trans. New Zeal. Inst. 1898, Vol. XXXI., p. 28, 1899; Hall, Key Birds Austr., p. 98, 1899; Campbell, Nests and Eggs Austr. Birds, p. 950, 1901; Buller, Suppl. Birds New Zeal., Vol. I., p. 193, 1905; Hall, Key Birds Austr., p. 98, 1906; Mathews, Handl. Birds Austral., p. 32, 1908.

Ardea cinerea rectirostris Mathews, Nov. Zool., Vol. XVIII., p. 230, 1912; *id.*, List Birds Austr., p. 80, 1913.

DISTRIBUTION. Siberia (breeding), migrating southward to Australia and New Zealand.

Adult male. Upper-parts ash-grey, including the back, wings, and tail, rather darker grey on the mantle, the lanceolate feathers on the scapulars hoary-grey; wing-coverts paler grey becoming white on the outer margin of the wing; bastard-wing, primary-coverts and quills black; secondaries also black, the inner ones grey on the inner webs towards the base, the long innermost secondaries grey like the back; fore-part of head and coronal crest white as also a narrow line round the eye, throat, entire neck, and ornamental feathers on the fore-neck; sides of crown and long nuchal crest black, as also an irregular line down the middle of the fore-neck; abdomen, thighs, and under tail-coverts dirty-white; sides of breast, sides of abdomen, and vent black; sides of body, axillaries, and under wing-coverts pale ash-grey, the small coverts round the edge of the wing white, under side of the quills lead-grey. Iris yellow, outer edge blackish, bare space round eye dirty greenish-grey; upper mandible brownish-black, lower one yellow; feet greenish-brown; upper parts of legs and the soles dirty yellow-green. Total length 932 mm.; culmen 116, wing 435, tail 175, tarsus 140.

Adult female. Similar to the adult male.



J. G. Keulemans, del

Witherby & Co

$\frac{1}{4}$
ARDEA RECTIROSTRIS.
(AUSTRALIAN GREY HERON).

EASTERN GREY HERON.

Immature, second year. Upper-parts lead-grey, including the hind-neck, back, wings, and tail; fore-part of crown lead-grey with pale shaft-lines, becoming darker on the sides of the nape and nuchal crest; ear-coverts pale ash-grey; chin and throat white; the dark line on the fore-neck wider and greenish-brown in colour; sides of the breast lead-grey like the sides of the body; ornamental plumes not developed either on the scapulars, head, or fore-neck. Maxilla blackish; feet lead-grey.

It appears to take three years for this bird to attain its fully-adult plumage.

Nest. "A flat platform of twigs without any lining" (Prjevalsky).

Eggs. Clutch, four; uniform light greenish-blue; axis 55-57 mm., diameter 40-42.

Breeding-season. April? May (Siberia).

"Is tolerably abundant in Dalai-nor and in the Hoang-ho Valley, i.e. in localities where marshes can be found. It arrives in S.E. Mongolia towards the end of March, and about Gu-bey-key we noticed it even on the 3rd of March. We did not meet it at Koko-nor, but obtained a specimen in Kan-su about the middle of May.

"It is common in Ussuri country, and arrives at Lake Hanka about the 10th of March in small numbers, whilst the principal migration takes place in the end of this month; all this time the birds keep together in flocks, sometimes in company with *Herodias alba*, *Grus leucogeranus*, or Ibises.

"They are extremely cautious, and choose for their nesting-places the small thick reedy islands of the river Lefa, which runs into Lake Hanka. Here the nests are very numerous, close to each other, all being built of the same shape and very carelessly. Some twigs, without any lining, form the whole structure, which is of a flat shape and not elevated beyond two or three feet above the water-mark. It is difficult to understand how the eggs do not get injured in these nests during a strong wind.

"I visited the above-described locality in the middle of June, when the young had partly left their nests, whilst the others were just at the point of doing so.

"During the autumnal migration (i.e. in September and beginning of October) I met with many flocks of these birds on the coast of the Japanese Sea."*

"It arrives about Pekin in the month of March and leaves again on the approach of winter, in small bands of twenty to thirty individuals."†

"The Grey Heron is distributed all along the Amur, especially in the wooded country along the lower course. Indeed, it has there large and undisturbed nesting-places and exceptionally good feeding-grounds in the wide river, which is so abundant in fish, and has countless shallow inlets and flat, marshy or sandy banks. During our journey along the river we saw

* Prjevalsky, *Rowley's Miscel.*, Vol. III., p. 48, 1878.

† David, *Mém. l'Acad. Imp. Sci. St. Petersb.*, Ser. VII., Vol. XXXIX., p. 983, 1893.

THE BIRDS OF AUSTRALIA.

them almost daily, sometimes several times a day, either singly or from three to six birds standing in the shallow water or on the edge of it. These birds rose slowly and flew away as our boat approached. As a rule they flew when the boat was quite far off; we occasionally managed to get near them for a moment when hidden by a bend in the river.”*

“Along the brooks and rivers of the upper Dauria Steppes, the Grey Heron was quite an abundant bird. It breeds also in considerable numbers, gregariously, on the desert Aral Islands, which lie in the almost dried-up basin of the Barun-Tarei. Here they made nests three feet high, standing separately on the ground, and they could be recognised at a distance. The vegetation growing nearest these islands, offers no materials for the Heron’s nest, for it is completely without brushwood and trees. On the little Ulsa river, which must be at a distance as the crow flies of quite 12 to 15 versts (a verst is 1170 yards), grew a species of willow here and there; and the birds must fly northwards 30 to 40 versts before they come to the shrubby district of the Onon Valley and find material for their nest-building. One heronry was found on April 17, 1856, another on the 21st. A setting of four eggs which was found on May 1st were quite fresh. The Heron was also found on the Argunj and Amur; where these streams have a mountainous shore it was not so common. On the upper Dauria Steppes it appeared very early, that is during the night of March 26-27. On April 4th the main arrival had taken place. It leaves this district in the beginning of September. On August 30th it was still plentiful in the Valley of the Onon. Some birds delay their departure considerably, and live there singly. Several were seen on 26th September, 1856, in the middle of the Onon Valley.”†

The bird figured and described is a female, collected on Hainan Island, China, on April 12th, 1902.

In the *Proc. Zool. Soc.* (Lond.) 1843, p. 22, Gould introduced a new species as *Ardea rectirostris*, thus:—

“*Ardea rectirostris*. *Ardea superne fuscescenti-cinerea capite et crista nigris; rostro magis recto atque robusto quam in Ardea cinerea*.

“Crown of the head and crest dull black; back of the neck and all the upper surface brownish grey, passing into greyish white on the tips of the wing coverts; secondaries, scapularies and tail feathers dark grey: spurious wing and primaries greyish black; sides of the face and chin white; down the front of the neck an interrupted line of black, formed by each feather having an oblong stripe of black on the inner side of the stem near the tip, the marks becoming larger and paler in colour as they approach the chest, the same kind of marking continuing over the under surface, but the stripes very pale brown: under tail-coverts white: bill dark horn colour, becoming nearly black on the culmen: feet greenish black.

* Schrenck, *Vögel des Amur-Landes*, p. 434, 1860.

† Radde, *Reisen Süden von Ost-Sibir.*, p. 343, 1863.

EASTERN GREY HERON.

"Total length, 37 inches : bill 7 : wing $16\frac{1}{2}$: tail 7 : tarsi $6\frac{1}{2}$.

"Hab. : New South Wales.

"The above description is taken from a bird which appears to be immature ; it has much the appearance of, and is nearly allied to, the Common Heron of Europe."

In the sixth volume of the *Birds of Australia*, pl. 54, 1848, Gould figured—under the name *Ardea rectirostris*—a bird which did not agree with the above description, but which was referable to the next species. At the same time, in the *Proc. Zool. Soc. (Lond.)* 1848, p. 58, Gould described—under the name *Ardea leucophæa*—a bird as coming from New South Wales and India.

The description of *Ardea rectirostris* above given, shows that this name is undoubtedly referable to *Ardea cinerea* Linné, and not to the bird to which Gould applied it in 1848.

It is noteworthy that in the Gould Collection preserved in Philadelphia, the only bird which answers to the descriptions of *Ardea rectirostris* and *Ardea leucophæa* is a bird from South India, no Australian specimen being conserved (Stone, *Austral Av. Rec.*, Vol. I., p. 142, 1913).

I have been unable to trace any record since Gould's time, and it should be carefully noted that no specimen is known from Australia, and that the only notice is that by Gould. I do not think that there is satisfactory evidence for the inclusion of this bird in the Australian Avifaunal List, and it is only here admitted through the fact of Gould's introduction having prejudiced the preparation of the plate, and there is quite a reasonable probability for the recognition of the species as a chance wanderer. The plate here given and the descriptions offered will enable the accurate determination in case of such event.

In 1899 Buller added it to the New Zealand avifauna from a "skin of one which was caught on board a schooner off the east coast, about the authenticity of which there can be no doubt." No date of capture was however recorded, and it should be again noted that the "skin" was procured, no mention being made of the bird in the flesh. At this time it is impossible to trace such a record, so that this also seems quite a dubious report.

GENUS—TYPHON.

TYPHON Reichenbach, Nat. Syst. Vögel., p. xvi., 1852. Type *T. sumatrana*.

ARDEINE birds agreeing structurally with *Ardea*, but differing at sight in the longer bill and shorter tail.

The bill is relatively longer and more slender, being more than one-third the length of the wing and equal to the metatarsus; the depression in the sides of the upper mandible is more marked, though less noticeable in the lower; the serrations towards the tip on the edges of the upper mandible are more pronounced, while the notch is almost obsolete; the gonydeal angle is little marked owing to the greater length of the bill.

In the wing the third primary is still longest, though little exceeding the second and fourth, but the first and fifth are subequal and distinctly shorter, while there is no distinct notching on their inner webs. The tail is appreciably shorter, and the middle toe is more than half its length; in *Ardea* the middle toe is about equal to half the length of the tail.

In the metatarsus the frontal covering shows a still stronger tendency, than in *Ardea*, to break up into irregular reticulation, though the immature show clear transverse scutella.

The genus *Ardeomega* has been confused with the present genus, but the much larger size throughout makes it easily separable. The bill is much longer and much more massive. In *Typhon* the depth of the bill at its base is about one-sixth its length, whereas in *Ardeomega* the depth is more than one-fifth the length. The bill, though so long, is only about one-third the wing-length and is less than the length of the tail or metatarsus. In most other features it agrees with *Typhon*, but markedly differs from *Ardea* with which it is associated in the *Catalogue* of the Birds in the British Museum.



J.G. Keulemans, del.

Witherby & Co

$\frac{1}{4}$
ARDEA MATHEWSÆ.
(*GREAT-BILLED HERON*).

TYPHON SUMATRANA MATHEWSÆ.

GREAT-BILLED HERON.

(PLATE 184.)*

ARDEA SUMATRANA MATHEWSÆ Mathews, Nov. Zool., Vol. XVIII., p. 230, 1912;
Cooktown, Queensland.

Ardea rectirostris Gould (not 1843), Birds Austr., Vol. VI., pl. 54, 1848.

Ardea sumatrana (not Raffles) *id.*, Handb. Birds Austr., Vol. II., p. 296, 1865; Ramsay, Proc. Zool. Soc. (Lond.) 1868, p. 387; *id.*, *ib.* 1877, p. 341; *id.*, Tab. List Austr. Birds, p. 21, 1888; North, Austr. Mus. Cat., no. 12, p. 317, 1890; Sharpe, Cat. Birds Brit. Mus., Vol. XXVI., p. 68, 1898; Hall, Key Birds Austr., p. 98, 1899; Campbell, Nests and Eggs Austr. Birds, p. 950, 1901; Hartert, Nov. Zool., Vol. XII., p. 203, 1905; Hall, Key Birds Austr., p. 98, 1906; Mathews, Handl. Birds Austral., p. 31, 1908; Cornwall, Emu, Vol. IX., p. 138, 1910; Broadbent, Emu, Vol. X., p. 243, 1910.

Ardea sumatrana mathewsæ Mathews, Nov. Zool., Vol. XVIII., p. 230, 1912 (Cooktown, Queensland).

Ardea sumatrana gilberti Mathews, *ib.* (Derby, North-west Australia).

Typhon sumatrana mathewsæ Mathews, List Birds Austr., p. 80, 1913.

DISTRIBUTION. North New South Wales; Queensland; Northern Territory; North-west Australia.

Adult male. General colour above dark brown with a purplish gloss including the upper-back and wings; the scapulars lanceolate in form and hoary-grey in colour; lower-back, outer marginal coverts and tail ash-grey; head and hind-neck brown with an elongated nuchal crest of lanceolate feathers; lower hind-neck and fore-neck hoary-grey with long lanceolate feathers; chin and upper-throat whitish; sides of face and lower-throat dusky-brown; abdomen, thighs, and under tail-coverts dusky ash-grey, like the under wing-coverts; axillaries uniform ash-grey. Bill black, lower edges of lower mandible yellow; iris and bare space round the eyes yellow; feet black, soles yellowish. Total length 1,047 mm.; culmen 173, wing 443, tail 160, tarsus 150.

Adult female. Similar to the adult male.

Young male, one year old. Upper-parts dark brown or plumbeous-grey, the feathers everywhere broadly margined with ferruginous, except the quills and tail-feathers; crown of head dark brown with rusty margins to the feathers; the neck all round and nuchal crest ferruginous; abdomen, under tail-coverts, and

* The Plate is lettered *Ardea mathewsæ*.

THE BIRDS OF AUSTRALIA.

under wing-coverts ash-grey, the feathers broadly margined with rufous; throat whitish with brown edges to the feathers, which impart a streaked appearance. There is no indication of lanceolate feathers on the scapulars or fore-neck. Bill as in the adult, but the bare part round the eyes pink; feet heliotrope.

Immature, two years old. Upper-parts similar to the adult male, with only an indication of ornamental plumes on the scapulars and a few remaining rufous margins, of the younger bird, on the wing-coverts and sides of the breast; the crest-feathers, which are more developed, are slate-grey with hoary-white ends; the ornamental plumes on the hind-neck and fore-neck are well advanced but still retain a certain amount of the ferruginous colour of the younger plumage; abdomen and under tail-coverts grey with ferruginous margins; axillaries almost entirely uniform ash-grey; under wing-coverts ash-grey with pale rufous margins; throat white with obsolete streaks of pale brown; thighs ash-grey with white shaft-lines and tinged with rufous.

Immature, three years old. This bird has entirely lost the ferruginous colour of the immature-plumage and differs only from the adult male by the absence of the ornamental plumes on the scapulars, in having the back and wings dark brown, the nuchal crest only slightly developed as also the plumes on the lower hind-neck and fore-neck. The head, neck, and abdomen rusty-brown, becoming paler on the under tail-coverts; thighs greyish-brown, darker brown on the lower portion.

I am inclined to think that this bird does not attain its fully adult plumage until the fourth year.

Nest. "Composed of coarse sticks many being $\frac{5}{8}$ and $\frac{3}{4}$ of an inch thick, flat and practically no lining; dimensions outside 48 inches across and 19 thick. Placed in a mangrove tree overhanging a small gutter, about 15 feet above low water" (Cornwall).

Eggs. "Clutch two, swollen oval, rather pointed at one end, colour beautiful light bluish-green. Shell coarse and slightly glossy, minutely yet distinctly pitted all over. Axis 69 to 71 mm. Diameter 47-49." (Cornwall.)

Breeding-season. April (Cornwall, O'Connell River, Queensland); February (Gilbert, Northern Territory).

MR. J. P. ROGERS found these birds rare in the North-west of Australia. He was informed that they bred in Stokes Bay. He also found them on Melville Island, where they frequented the mangroves.

"This species is always difficult to obtain, frequenting the extensive mud flats, where it is impossible to walk, and seldom coming within shot from the shore."*

This bird was observed "on Slade Point Creek, a tidal gutter bordered with a dense fringe of mangroves, and running into the sea a few miles to the north of Mackay, Queensland. At low tide the creek runs nearly dry, and the muddy flats offer food to the Heron's taste. It is a shy bird at all times, and haunts quiet reaches of the many creeks and gutters which intersect the immense belts of mangroves along our coast. When disturbed it flies with a lazy, slow, and rather ungainly, undulating motion, shunning observation by disappearing into more secluded spots.

* Ramsay, *Proc. Zool. Soc.* (Lond.) 1877, p. 341.

GREAT-BILLED HERON.

"A nest and two eggs were found in the mangroves on April 15th, 1909, and situated in the same tree—in fact, on the same branch, and only some 18 inches from the fresh nest—were the remains of one which had evidently been used the previous season.

"On the 15th of May, 1909, on Clairview Creek, Broad Sound, some 70 miles to the southward of Mackay, this bird was again met with. About 3 miles up Clairview Creek, where the mangroves are very thick, a Heron was flushed, but no nest found. Half-a-mile further on a pair of these birds were noted . . . and a nest discovered, which contained a young bird. The nest, like the one at O'Connell River, was very roughly built, being composed of dead mangrove sticks, with no lining. It appeared to be a very old nest which had been roughly repaired year after year. Dimension of nest—diameter, 44 inches ; egg cavity, 5 inches ; very flat ; depth of whole, 15 inches. Placed in red mangrove tree, 6 feet from the mud, and not more than 4 feet from high-water mark."*

The bird figured and described is a female, collected on Bellenden Ker, North Queensland, by Mr. E. Olive, on December 8th, 1899, and presented to me by Mr. H. C. Robinson.

This species was figured by Gould in the *Birds of Australia*, under the name *Ardea rectirostris* Gould, but I have shown that the bird described by Gould under this name was not this one but the preceding.

In his *Handbook* (Vol. II., p. 296, 1865), Gould synonymised *A. rectirostris* with the prior *Ardea sumatrana* of Raffles, described from Sumatra (*Trans. Linn. Soc. (Lond.)*, Vol. XIII., p. 325, 1821).

In the *Nov. Zool.*, Vol. XVIII., p. 230, 1912, I separated the North Queensland bird under the name *Ardea sumatrana mathewsæ*, giving as characters: "Differs from *A. s. sumatrana* in its browner coloration above, with a bronze tinge, its longer bill and shorter tarsus."

I also indicated the North-western form as different, as *A. s. gilberti*, writing: "Differs from *A. s. mathewsæ* in its lighter coloration above."

I am here uniting these two forms, but later anticipate the reinstatement of the latter when longer series are available for study. There is no doubt that these birds are local in their distribution, and that subspecies are recognisable ; but the variation owing to sex and age is such that, unless many specimens are criticised, faulty conclusions are inevitable.

* Cornwall, *Emu*, Vol. IX., pp. 138-141, 1910.

GENUS—E G R E T T A .

EGRETТА Forster, Synopt. Cat. Brit. Birds, p. 59, 1817 Type *E. garzetta*.
Garzetta Kaup, Skizz. Entwick-Gesch. Nat. Syst., p. 76,
 1829 Type *E. garzetta*.

SMALLER Ardeine birds with long, slender bill, long neck, long wings, long legs and toes, and long tail.

There is no crest on the head but some plumes depend from the nape ; long ornamental lanceolate plumes are observed on the fore-neck and there is a huge dorsal train. This is in the breeding-plumage, and birds so feathered should be always readily distinguished.

The culmen is long, slender, and somewhat compressed ; it is about one-third the length of the wing, but less than the metatarsus.

The wing is long with the first four primaries subequal in length, the second probably the longest.

The tail is about equal to the length of the culmen and a little less than the metatarsus.

The legs are long with long exposed tibia ; the metatarsal covering is composed of transverse scutes in front and hexagonal scales behind. The scutes are perfectly preserved in mature birds and show practically no tendency to break up as those of *Ardea* and *Typhon* do.

The toes are long with the characters of *Ardea*, the hind toe and interwebbing being the same.

The entire coloration of the genus in all stages of plumage is pure white, and in consequence it is necessary to make comparisons with the next two genera, whose plumage is also wholly white throughout.

These three genera have been continually confused by Australian students, as though in their breeding-plumage they are well differentiated by means of their different development of breeding-ornaments, in the winter these are dropped, and young birds do not possess such.

They can unfailingly be distinguished by the careful examination of their structural parts. *Mesophoyx* is a bird of about the same size as *Egretta*, but in this genus the bill is a little shorter but much stouter ; the tail is noticeably longer, while, though the legs are a little longer, the toes are considerably so.

EGRETTA.

Herodias is a much larger bird with a longer, heavier bill, much longer wing, tail, legs, etc.

An artificial key might be thus made out for Australian birds other than in breeding-plumage:—

Wing over 320 mm. 	<i>Herodias.</i>
---	------------------

Wing under 300 mm.

Bill long and slender, about one-third the length of the wing 	<i>Egretta.</i>
--	-----------------

Bill long and thick (conical), noticeably less than one-third the length of the wing 	<i>Mesophoyx.</i>
---	-------------------

EGRETТА GARZETTA IMMACULATA.

LESSER EGRET.

(PLATE 185.)

HERODIAS IMMACULATA Gould, Birds Austr., Vol. VI., pl. 58, 1846; Port Essington.

Herodias immaculata Gould, Birds Austr., Vol. VI., pl. 58, 1846.

Ardea immaculata Gray, Genera Birds, Vol. III., p. 555, 1847.

Garzetta immaculata Bonaparte, Comptes Rendus Sci. (Paris), Vol. XL., p. 722, 1855.

Herodias melanopus (not *Ardea melanopus* Wagler 1829) Gould, Handb. Birds Austr., Vol. II., p. 304, 1865; Ramsay, Tab. List Austr. Birds, p. 21, 1888.

Garzetta nigripes Sharpe, Cat. Birds Brit. Mus., Vol. XXVI., p. 122, 1898; Hall, Key Birds Austr., p. 99, 1899; Robinson and Laverock, Ibis 1900, p. 652; Campbell, Nests and Eggs Austr. Birds, p. 958, 1901; Hall, Key Birds Austr., p. 99, 1906; Mathews, Handl. Birds Austral., p. 32, 1908.

Mesophoyx plumifera (not Gould) Mathews, Emu, Vol. X., p. 105, 1910.

Egretta garzetta immaculata Mathews, Nov. Zool., Vol. XVIII., p. 231, 1912; Mathews, List Birds Austr., p. 81, 1913.

DISTRIBUTION. North-west Australia; Northern Territory; North Queensland.

Adult male, in breeding-plumage. Entirely pure white above and below with a dorsal train and long ornamental lanceolate plumes on the fore-neck. Bill black, base of lower mandible and lores yellow; eyes and eyelash yellow; feet and legs olive-brown. Total length 551 mm.; culmen 83, wing 250, tail 99, tarsus 105.

Adult female, in breeding-plumage. Similar to the adult male but smaller, and the ornamental plumes on the back and fore-neck less developed.

Adult, in non-breeding plumage. Differs by the almost entire absence of the dorsal train and the ornamental feathers on the fore-neck.

Nest. "A platform of sticks (about 12 inches in diameter) in a eucalyptus or other tree at the edge of a swamp or lagoon. Usually in colonies." (Campbell.)

Eggs. "Clutch, three to four; short ellipse in shape; texture of shell somewhat coarse; surface slightly glossy and minutely pitted; colour light or pale bluish-green; axis 45-48 mm.; diameter 33-39" (Campbell).

Breeding-season. April (Campbell, North Queensland).

MR. J. P. ROGERS, writing from West Australia, says that when disturbed this bird, and *Herodias syrmatophora*, always rise high in the air and after circling for a while will alight again on the opposite side of the swamp.

H. Grönvold. del

Witherby & Co

$\frac{2}{5}$

EGRETTA IMMACULATA.
(*LESSER EGRET*).



LESSER EGRET.

Except the above I can find no account of the life-history of this bird, nor can I find any authentic occurrences of it in any part of Australia other than given in the distribution above.

The bird figured and described is a male, collected on Melville Island, Northern Territory, on February 17th, 1912, by Mr. J. P. Rogers.

The Australian Lesser Egret is only subspecifically distinct from the European bird which was described by Linné as *Ardea garzetta* (*Syst. Nat.*, 12th ed., p. 237, 1766). In the *Catalogue* of the Birds in the British Museum, Vol. XXVI., the latest and only monograph of the family, Sharpe admitted that these birds were most perplexing on account of lack of series in breeding-plumage, and though this was written fifteen years ago, the same statement is true to-day. Sharpe there admitted, as a distinct species, the Australian birds, and associated them with Javan birds under the Javan name "*nigripes*." He however considered Sumatran specimens to be identical with Indian, Chinese, European, and African birds. Such a distribution does not coincide with zoogeographical boundaries, and it is most certainly wrong. To delimit the subspecies however, with the material available, is quite impossible, and as the Australian specimens I have examined with authentic data show that the legs are not black, and as the birds are somewhat smaller, I am conserving Gould's name of *immaculata* for the Australian bird.

GENUS—MESOPHOYX.

MESOPHOYX Sharpe, Bull. Brit. Ornith. Club, Vol. III.,
p. xxxviii., 1894 Type *M. intermedia*.

ARDEINE birds resembling *Egretta*, but having the head crested, no nape-plumes, and in place of the lanceolate ornamental breast-plumes, long feathers with disintegrated webs.

The bill is stout and somewhat conical, and is much less than one-third the length of the wing and also less than the metatarsus.

The wing is long, with the first three primaries subequal and longest.

The tail is long and noticeably exceeds the length of the culmen or the metatarsus.

The legs are long, with a long exposed tibia; the metatarsus is considerably longer than the culmen. The toes are long.

It should be noted that in the *Catalogue* of the Birds in the British Museum, Vol. XXVI., Sharpe separated *Mesophoyx* from *Herodias* and *Garzetta* (= *Egretta*) on account of its having serrations on the edges of the upper mandible. These are, however, so indistinct as to be almost negligible, and I would in preference note that in *Egretta*, *Mesophoyx*, and *Herodias*, the serrations noticed in the bill of *Ardea* and *Typhon* are absent.

I have given under *Egretta* the characters whereby these two genera can be easily differentiated.



J.G. Keulemans, del.

Witherby & Co

$\frac{1}{3}$
EGRETTA PLUMIFERA.
(PLUMED EGRET).

MESOPHOYX INTERMEDIA PLUMIFERA.

PLUMED EGRET.

(PLATE 186.)*

HERODIAS PLUMIFERUS Gould, Proc. Zool. Soc. (Lond.) 1847, p. 221, 1848; New South Wales.

Herodias plumiferus Gould, Proc. Zool. Soc. (Lond.) 1847, p. 221, 1848; *id.*, Birds Austr., Vol. VI., pl. 57, 1848.

Egretta plumifera Bonaparte, Comptes Rendus Sci. (Paris), Vol. XL., p. 722, 1855.

Ardea plumifera Gray, Proc. Zool. Soc. (Lond.) 1858, p. 197.

Herodias egrettoides (not Gmelin) Gould, Handb. Birds Austr., Vol. II., p. 303, 1865; Ramsay, Proc. Zool. Soc. (Lond.) 1877, p. 341.

Herodias intermedia (not Wagler) *id.*, Proc. Linn. Soc. N.S.W., Vol. II., p. 199, 1878; *id.*, Tab. List Austr. Birds, p. 21, 1888.

Mesophoyx plumifera Sharpe, Cat. Birds Brit. Mus., Vol. XXVI., p. 87, 1898; Hall, Key Birds Austr., p. 98, 1899; Campbell, Nests and Eggs Austr. Birds, p. 951, 1901; Hartert, Nov. Zool., Vol. XII., p. 203, 1905; Hall, Key Birds Austr., p. 98, 1906; Mattingley, Emu, Vol. VII., pp. 69-72, 1907; Campbell, *ib.*, Vol. VII., p. 91, 1907; Mathews, Handl. Birds Austral., p. 32, 1908; North, Austr. Mus. Sp. Cat., no. 1, Vol. IV., p. 19, 1913.

Egretta intermedia plumifera Mathews, Nov. Zool., Vol. XVIII., p. 230, 1912.

Mesophoyx intermedia plumifera Mathews, List Birds Austr., p. 81, 1913.

DISTRIBUTION. Northern Territory; Queensland; New South Wales; Victoria.

Adult male, in breeding-plumage. General colour of the upper- and under-parts pure white. A long dorsal train, some ornamental disintegrated feathers on the fore-neck, and a slight nuchal crest. Bill, iris, and orbits yellow; tarsus black; tibia yellow. Total length 550 mm.; culmen 77, wing 273, tail 113, tarsus 97.

Adult female, in breeding-plumage. Similar to the adult male.

Adult, in winter-plumage. Differs from the summer-plumage by the absence of the dorsal train and the ornamental feathers on the fore-neck.

Nest. "Nearly flat and scantily formed of thin sticks and twigs, in some instances with leaves attached, and were so small that they were almost covered by the birds when sitting" (North).

* The Plate is lettered *Egretta plumifera*.

THE BIRDS OF AUSTRALIA.

Eggs. "Clutch four, the shell being close-grained with fine pittings, others smooth and lustreless. Uniform pale sea-green. Axis 45-46 mm.; diameter 31-33." (North.)

Breeding-season. November (Robinson, New South Wales); October to January (North, New South Wales).

MR. MATTINGLEY, in his article, says: "Further on we observed several White Egrets (*Herodias timoriensis*) and on close inspection we discovered several smaller Plumed Egrets (*Mesophoyx plumifera*) sitting on their bulky stick-nests, which are somewhat less in size than the Night-Heron's, and not so frequently underwoven with gum leaves, although the Night-Herons also build nests similar to the Plumed Egrets when viewed from below, only a little larger. The Plumed Egret's nest measures about 13 to 14 inches in diameter, and is almost imperceptibly shallower than the Night-Heron's . . . Paddling through the timber we were able to ascertain the extent of the heronry of White Egrets, and computed their number to be about 150 individuals—the remnant of a once large colony, which we were informed must have totalled originally about 700 birds, but which, owing to the demands for their back-plumes for the adornment of ladies' hats, had been decimated by plume-hunters, and reduced to the present number of about 150 birds. The only method by which the hunters are able to obtain Egrets' plumes in quantities is to shoot the birds on their nests, since at this period they are more readily approached, and allow a person to get within gunshot. Owing to the shyness of the Egrets when they are free from the cares of rearing a family, very few plumes are obtained. A shot by us into space albeit, sends the birds in dozens from their nests, and as they fly away, usually to the nearest dry tree, their snow-white plumage is pleasantly silhouetted against the green foliage of the surrounding gum trees. How pure, how graceful they look in the sunshine as they alight on the dead tree-top and contemplate the intruders in the boat beneath them."

There has been some confusion regarding this Egret, and Mr. Mattingley has given some photos with an interesting account, in the *Emu*, Vol. VII., of a New South Wales heronry.

On pl. v. a sitting bird on the nest is named *Mesophoyx plumifera*, but the very long bill suggests *Herodias alba syrmatophora*; while the two photos given on pl. VII.—one referred to the former, the other to the latter species—are undoubtedly two photos of the same nest. From this it is apparent that Mr. Mattingley's photos have become mixed, and the birds I received from Mr. Mattingley are referable to *H. a. syrmatophora*.

While Mr. Mattingley wrote about "their bulky stick-nests" which "measured about 13 to 14 inches in diameter," Mr. North has stated that

PLUMED EGRET.

the nests built on Buckiinguy Station, New South Wales, are small and almost covered by the sitting bird. More investigation is needed to reconcile these discrepant accounts.

In the *Catalogue* of the Birds in the British Museum, Vol. XXVI., Sharpe in this genus admits the Australian form as distinct from the Javan, with which he unites Indian and Chinese birds. In addition to the different coloration of the tibia and legs, the Australian birds are smaller.

The Javanese bird was described by Wagler as *Ardea intermedia* (*Isis* 1829, p. 659), and this becomes the species-name.

In this genus also, Sharpe noted that characters were available whereby the African form could be separated. The importance of this will be noted under the following species.

The bird figured and described is a male, collected at Mackay, Queensland, in December, 1900.

GENUS—HERODIAS.

HERODIAS Boie, Isis 1822, p. 559 Type *H. egretta*.
Casmerodius Gloger, Hand. u. Hilfsb., p. 412, 1842 .. Type *H. egretta*.

ARDEINE birds resembling *Egretta* and *Mesophoyx* in coloration, but with no crest-plumes nor ornamental breast-feathers in breeding-plumage. The species are of much larger size. The culmen is very long and proportionately stout, noticeably less than the length of the tail or metatarsus. The wing has the first three primaries subequal and longest.

The tail is more than one-third the length of the wing, and though constantly longer than the culmen, is often exceeded by the metatarsus.

The legs are very long and so is the exposed tibia; the metatarsus is always more than one-third the length of the wing, and is sometimes almost half its length.

The toes and webbing as in the preceding genera.

I have pointed out that this genus is easily separated from the two preceding genera by its much larger size. The absolute measurements are quite sufficient to accurately determine this genus as any bird having a bill over 100 mm., a wing over 320 mm., and a metatarsus over 120 mm., would be unable to be placed elsewhere.

In *Mesophoyx* and *Herodias*, as well as in *Egretta*, the frontal covering of the metatarsus in adult specimens is regularly scutellate.



H Grönvold del

Witherby & L

EGRETTA NEGLECTA.
(NORTHERN WHITE HERON).

HERODIAS ALBA SYRMATOPHORA.

WHITE EGRET.

(PLATE 187.)*

HERODIAS SYRMATOPHORUS Gould, Birds Austr., Vol. VI., pl. 56, 1846 ; New South Wales.

Herodias syrmatophorus Gould, Birds Austr., Vol. VI., pl. 56, 1846 ; Sturt, Narr. Exp. Centr. Austr., Vol. II., App., p. 51, 1849.

Egretta syrmatophora Bonaparte, Comptes Rendus Sci. (Paris), Vol. XL., p. 722, 1855.

Ardea syrmatophora Gray, Proc. Zool. Soc. (Lond.) 1858, p. 197.

Herodias alba Gould, Handb. Birds Austr., Vol. II., p. 301, 1865 ; Ramsay, Proc. Zool. Soc. (Lond.) 1877, p. 341 ; *id.*, Tab. List Austr. Birds, p. 21, 1888 ; North, Austr. Mus. Cat., no. 12, p. 398, 1890 ; Morton, Papers and Proc. Roy. Soc. Tasm. 1892, p. vi., 1893 ; Kearland, Trans. Roy. Soc. South Austr., Vol. XXII., p. 189, 1898.

Herodias timoriensis Sharpe, Cat. Birds Brit. Mus., Vol. XXVI., p. 98, 1898 ; Robinson and Laverock, Ibis 1900, p. 651 ; Campbell, Nests and Eggs Austr. Birds, p. 952, 1901 ; Hall, Key Birds Austr., p. 98, 1906 ; Berney, Emu, Vol. VI., p. 115, 1907 ; Mattingley, *ib.*, Vol. VII., pp. 69-72, 1907 ; Ingram, Ibis 1907, p. 394 ; Mathews, Handl. Birds Austral., p. 32, 1908 ; Ingram, Ibis 1908, p. 463 ; Ogilvie-Grant, *ib.*, 1910, p. 177 ; Mathews, Emu, Vol. X., p. 105, 1910 ; Littler, Handb. Birds Tasm., p. 192, 1910 ; North, Austr. Mus. Sp. Cat., no. 1, Vol. IV., p. 21, 1913.

Herodias alba timoriensis Hartert, Nov. Zool., Vol. XII., p. 204, 1905.

Egretta alba syrmatophora Mathews, Nov. Zool., Vol. XVIII., p. 230, 1912.

Egretta alba neglecta Mathews, *ib.* (Parry's Creek, North-west Australia).

Herodias alba syrmatophora Mathews, List Birds Austr., p. 81, 1913 ; *id.*, Ibis 1914, p. 106.

DISTRIBUTION. Australia ; Tasmania.

Adult male, in breeding-plumage. Entire plumage pure white, above and below, with a very long dorsal train. Bill yellow, tomium and tip black ; lores, bare skin round the eye and corner of mouth greenish-yellow ; eye and eyelash yellow ; feet and legs black ; knee and lower tibia yellow. Total length 1,000 mm. ; culmen 121, wing 372, tail 133, tarsus 150.

Adult female, in breeding-plumage. Similar to the adult male but smaller ; culmen 98, wing 328, tarsus 144.

* The Plate is lettered *Egretta neglecta*.

THE BIRDS OF AUSTRALIA.

Adult, in non-breeding plumage. Differs from the summer- or breeding-plumage by the absence of the dorsal train.

Nest. A platform of sticks, about eighteen inches across, with no lining.

Eggs. Clutch, three or four; uniform bluish-green with minute shallow pittings; axis 54-56 mm.; diameter 38-40.

Breeding-season. November to January.

MR. J. P. ROGERS found these birds in the North-west of Australia and on Melville Island. On the latter place they could only be seen when they rose from the reeds, which in most places, though not very thick, were tall enough to completely hide the birds while they were on the ground. They were always wary.

Captain S. A. White, writing from South Australia, says: "These birds are scattered thinly over the country and are very conspicuous objects as they wade about in the lakes and lagoons, their white plumage being a great contrast to the dark-green foliage around them."

"These birds form a prominent feature in the avifauna of the vicinity of the Fitzroy River [North-west Australia]. Scarcely a lagoon or stretch of water in the river was found without seeing one or more of these birds solemnly wading in the shallows in quest of prey, or sleeping on one leg. Although slow in its movements the Egret is very shy, and considerable care is required to approach it within shot.*

The birds collected by Mr. Mattingley in December were in full breeding-plumage and had the bill black, others from Victoria also with plumes on the back, shot in February, had the bill yellow with only the tip black, others from the North-west and Northern Territory had the plumes, but the bill quite yellow.

It seems possible that when the plumes are first in their full glory the bill is black, but that it soon changes to yellow, the black on the tip being the last to disappear.

I wish to thank Mr. Mattingley for all the trouble he has taken to get me these birds in full breeding-plumage. They have been most useful to me.

The following notes by Mr. C. F. Cole are most interesting:—

"In December, 1909, I visited Mathoura, New South Wales, the breeding-place and home of this beautiful bird. Scores of these birds were to be seen feeding and sporting around the many swamps in this locality, principally the one known as the red-bank swamp. My object in this visit was to secure specimens and become more conversant with the habits of this bird. Five specimens secured by me for scientific purposes are as follows:

* Keartland, *Trans. Roy. Soc. South Austr.*, Vol. XXII., p. 189, 1898.

WHITE EGRET.

two fully-matured birds male and female, one mature male bird casting its plumes and growing new ones at the same time, one immature male carrying the first-season's plumes, and one young male about one month from nest. Descriptions of specimens secured: mature male, bill nearly all black, except basal portion, which is straw-yellow in colour; bare patch before the eyes and at base of upper mandible pale green, bare patch surrounding the eyes orange colour, irides orange; feet and tarsus black, lower portion of bare thigh black, upper portion near feathers running into yellowish; number of plumes 42, plumes extending from 4 to 6 inches past the tail; female same, but has the bill all black; quantity of plumes 38;—mature male No. 2, moulting: all of the bill pale yellow, excepting about one inch from the tip, which part is blackish in colour; feet and tarsus black, three parts of the bare portion of thigh between the joint and feathers mostly yellowish in colour; this bird is carrying 6 old frayed plumes and growing numerous fresh plumes in blood-feather from 1 to 8 inches in length; bare patch before the eyes pale green, irides orange;—immature male probably two years from nest: feet and tarsus black, highest portion of bare thigh near feathers yellowish, bill three parts from tip black, basal portion yellowish, bare patch before eyes and base of mandible pale green, irides orange; this bird carries its first-season's plumes: plumes short, not passing wings or tail in length, quill of plume-feather much thinner than in mature birds, filaments shorter and finer; this bird carries 8 such plumes;—young male about one month from nest: bill pale yellow, bare patch before eyes very pale green, irides much paler than in mature birds, feet and tarsus black, bare part of thigh black, except small portion near the feathered part of thigh. From my knowledge of this species they start to plume the second year, becoming fully plumed about the fourth or fifth; also, that the change in colour in bill and the time of casting and growing the plumes vary: I have seen odd birds early in March fully plumed amongst dozens of unplumed ones, such plumed birds having the bill black and unplumed birds having yellow bills. Generally this bird becomes full-plumed, and the bill changes from yellow to black, before the breeding-season starts, the casting of plumes, and bill changing colour from black to yellow, starting about the latter end of December. Specimens dissected by me: the œsophagus and stomach were full of shrimps, small fish, and frogs. It is a fine sight to see these beautiful white, graceful birds standing in the shallow receding water in the swamps, catching their food as they rush by on their way to the Gulpha Creek and thence to the river Murray. These swamps or backwaters of the Murray are the spawning grounds for all kinds of fish indigenous to the River Murray.”

THE BIRDS OF AUSTRALIA.

In the 10th edition of the *Systema Naturæ*, Linné named (p. 144, 1758) *Ardea alba*. This species has almost a world-wide range, and owing to its lack of coloration, being pure white in every stage, subspecies are difficult to diagnose. This difficulty becomes more pronounced through the scarcity in collections of breeding birds. Non-breeding birds lack distinctive nuptial ornamentation, and in this stage show no essential distinction from immature specimens. Moreover, males are considerably larger than females, and if a young male and an old male be compared, great differences are seen to exist.

These facts have been fully borne upon every investigator of this genus, and all who have attempted to determine the forms have been compelled to accept more or less arbitrary conclusions.

In the *Catalogue* of the Birds in the British Museum, Vol. XXVI., Sharpe gave the results of a lengthy study of these forms, and noted the extreme improbability of achieving any lasting result without more breeding birds.

He accepted three species, *H. egretta* for the American bird, *H. alba* for Indian and European birds, and *H. timoriensis* for birds from Java, Timor, China, Japan, Australia, New Zealand, etc., giving the last named a range "from Japan and N. China, south through the Malayan Archipelago to Australia." His differential diagnosis for this form reads: "Ad. Similar to *H. alba*, but with the bill yellow in summer and winter; the train of dorsal plumes not very long and scarcely reaching beyond the tail; bill beautiful orange; naked space before and behind the eye fine greenish yellow; legs above the knee pale dull yellow, this colour continued down the centre of the inner part of the tarsi; remainder of tarsi and feet black."

The investigations of Messrs. Cole and Mattingley, above recorded, make it absolutely certain that the Australian bird has the bill black at some time in its career, and also indicate that the period during which the bill is black is comparatively fleeting and is not extensive as in the European form. Moreover it seems proven that the dorsal train is never so pronounced in the Australian as in the European bird. Further, as acknowledged by Sharpe, Australian birds have undoubtedly shorter legs than European or Indian birds. The great difference of length of the legs seen in the Indian specimens preserved in the magnificent Hume collection in the British Museum, is almost certainly due to age, and Mr. Cole's observations may lead to the correct solution.

In the present case Sharpe's distribution for his *H. timoriensis* cannot be accepted, as the short legs of the Australian form are quite distinctive, and no series of Timor birds are at hand for comparison with Australian

WHITE EGRET.

series. I am therefore utilising the Gouldian name *syrmatophora* given to the Australian bird, and at the present time am uniting all Australian birds under the one subspecific name. I separated the North-western bird on account of its smaller size; but by reason of the measurements overlapping, am not recognising it in this place, though there is little doubt from the series that the Northern bird does average smaller.

The bird figured and described is a male, collected on Melville Island, Northern Territory, on January 13th, 1912, by Mr. J. P. Rogers.

GENUS—NOTOPHOYX.

NOTOPHOYX Sharpe, Bull. Brit. Ornith. Club, Vol. V.,

p. xiii., 1896 Type *N. novæ-hollandiæ*.

ARDEINE birds with long, somewhat stout bills, long wings, and long legs and tail.

The species are of varied coloration, not uniformly white as the three preceding genera.

The head is crested, while no dorsal train of decomposed feathers is carried, but long lanceolate plumes can be observed on the back and also on the breast.

The culmen is long and stout, about one-fourth the length of the wing, and more than half the length of the tail.

The wing is long, with the third primary longest, the second about equal to the fourth, while the first is noticeably shorter.

The tail is long, more than one-third the length of the wing.

The legs are long, with a long exposed tibia, but for this group comparatively short, the metatarsus being only about one-third longer than the culmen.

The toes and inter-webbing are typical Ardeine.

Sharpe introduced the generic name *Notophoyx*, and designated as type the species *Ardea novæ-hollandiæ* Latham. He associated with it the species *Ardea pacifica* Latham, *Ardea picata* Gould, and *Ardea aruensis* Gray.

As I find these species to be certainly as different from each other as the other accepted genera of Herons, I have separated the former under the generic name *Myola*, and the latter two, which prove to be conspecific, under the name *Tonophoyx*.

It seems as well to here point out the differential features:—

Sharpe's diagnosis reads: "A full crest, but no elongated pair of nape plumes." The species *aruensis*, however, has the crest elongated and nape plumes are dependent.

Myola is similarly coloured to *Notophoyx*, and has a similar crest and dorsal ornament, but the ornamental breast-feathers are not lanceolate and the webs are disintegrated. The bird is a little larger, but the legs are noticeably longer, while the culmen, though very slightly longer, is decidedly stouter.

NOTOPHOYX.

Tonophoyx is quite differently coloured to the two preceding and has an elongated crest with long dependent nape-plumes, long lanceolate dorsal ornamental feathers, and a full breast-ornament of pointed lanceolate feathers. The bird is much smaller, with a proportionately longer and stouter bill, but rather short legs. A key might be given thus :—

Wing over 300 mm.					
Metatarsus over 150 mm.	..	..	..	..	<i>Myola.</i>
Metatarsus under 150 mm.	..	..	..	..	<i>Notophoyx.</i>
Wing under 300 mm.	..	..	..	..	<i>Tonophoyx.</i>

NOTOPHOYX NOVÆ-HOLLANDIÆ.

WHITE-FRONTED HERON.

(PLATE 188.)

ARDEA NOVÆ-HOLLANDIÆ Latham, Index Ornith., Vol. II., p. 701, 1790 ; New South Wales.

Ardea novæ-hollandiæ Latham, Index Ornith., Vol. II., p. 701, 1790 ; Gould, Birds Austr., Vol. VI., pl. 53, 1847 ; *id.*, Handb. Birds Austr., Vol. II., p. 299, 1865 ; Buller, Birds New Zeal., p. 231, 1873 ; Ramsay, Proc. Zool. Soc. (Lond.) 1877, p. 341 ; *id.*, Tab. List Austr. Birds, p. 21, 1888 ; Buller, Birds New Zeal., 2nd ed., Vol. II., p. 134, 1888 ; Legge, Pap. and Proc. Roy. Soc. Tasm. 1887, p. 97, 1888 ; North, Austr. Mus. Cat., no. 12, p. 318, 1890 ; French, Vict. Nat., Vol. VIII., p. 170, 1892 ; Keartland, Trans. Roy. Soc. South Austr., Vol. XXII., p. 188, 1898.

Ardea leucops Wagler, Syst. Av., Ardea, p. 181, sp. 17, 1827 (New South Wales).

Herodias novæ-hollandiæ Gray, List Sp. Birds Brit. Mus., pt. III., p. 80, 1844.

Egretta novæ-hollandiæ Lichtenstein, Nomencl. Av. Mus. Zool. Berol., p. 89, 1854.

Demiegretta novæ-hollandiæ Meyer, Verh. Zool.-Bot. Gesell. Wien, Vol. XXXI., p. 767, 1881.

Notophoyx novæ-hollandiæ Sharpe, Bull. Brit. Ornith. Club, Vol. V., p. xi., 1895 ; North, Rep. Horn. Sci. Exp., Zool., p. 105, 1896 ; Hall, Key Birds Austr., p. 98, 1899 ; *id.*, Insect. Birds Victoria, p. 180, 1900 ; Robinson and Laverock, Ibis 1900, p. 651 ; Campbell, Nests and Eggs Austr. Birds, p. 954, 1901 ; Littler, Emu, Vol. III., p. 216, 1904 ; Hall, Key Birds Austr., p. 98, 1906 ; *id.*, Useful Birds South Austr., p. 196, 1907 ; Berney, Emu, Vol. VI., p. 115, 1907 ; Mathews, Handl. Birds Austral., p. 32, 1908 ; Ingram, Ibis 1908, p. 463 ; *id.*, *ib.* 1909, p. 615 ; Ford, Emu, Vol. VIII., p. 31, 1908 ; Mathews, *ib.*, Vol. IX., p. 67, 1909 ; Littler, Handb. Birds Tasm., p. 192, 1910 ; Ogilvie-Grant, Ibis 1910, p. 176 ; Mathews, Emu, Vol. X., p. 105, 1910 ; Hanscombe, *ib.*, Vol. XI., p. 212, 1912 ; North, Austr. Mus. Sp. Cat., no. 1, Vol. IV., p. 23, 1913 ; Mathews and Iredale, Ibis 1913, p. 404 ; Mathews, List Birds Austr., p. 82, 1913.

Notophoyx novæ-hollandiæ novæ-hollandiæ Mathews, Nov. Zool., Vol. XVIII., p. 231, 1912.

Notophoyx novæ-hollandiæ parryi Mathews *ib.* (Parry's Creek, North-west Australia).

DISTRIBUTION. Australia ; Tasmania.



J. G. Keulemans, del.

Witherby & Co.

$\frac{1}{3}$

NOTOPHOYX NOVÆ-HOLLANDIÆ.
(WHITE-FRONTED HERON).

WHITE-FRONTED HERON.

Adult male, in breeding-plumage. Upper-parts chiefly lead-grey; crown of head and nuchal crest black; hind-neck dark slate-grey; mantle lead-grey, the feathers lanceolate in form, dark vinous at tips; dorsal plumes, also lanceolate and much elongated, lead-grey; bastard-wing and primary-coverts blackish; primary- and secondary-quills plumbeous-grey, as also the tail; fore-head, sides of crown, sides of face, and throat white—this colour extends in a more or less degree down the middle of the upper fore-neck; feathers of the lower fore-neck lanceolate in form and vinous in colour, which extends over the rest of the under-surface; axillaries uniform grey; under wing-coverts also grey, some of the greater series inclining to white. Bill black, lores and base of upper mandible slate-colour; base of lower mandible grey; eyes yellowish-grey; tarsi and feet olive-yellow. Total length 600 mm.; culmen 76, wing 325, tail 128, tarsus 100.

Adult female. Similar to the adult male; culmen 73, wing 305, tail 122, tarsus 100. The ornamental plumes on the lower fore-neck vary in colour on different individuals, being paler vinous in some and darker in others. In winter the ornamental plumes are lost and the back of the head is grey.

Nest. Roughly constructed of sticks about 50 feet up, generally near water. Practically no lining is put in, so that the eggs are visible from below the nest.

Eggs. Clutch, three to six; uniform pale green; axis 45-46 mm.; diameter 36-37.

Breeding-season. October (Dawson River, Queensland); September to January usually, but practically all the year round.

MR. J. P. ROGERS found the bird common in the North-west of Australia and the Northern Territory.

Captain S. A. White sends me the following: "These very common birds are distributed all over Australia. They spend most of the day wading in the swamps in search of aquatic insects, crayfish, crabs, etc., and at night fly to the big gum-trees, where they roost. Their flight is a heavy, flapping movement, and when nesting they keep up a harsh cry on the wing and fly with their necks straight out. The nest is placed in a gum-tree, generally near water, and is a rough construction of sticks. The eggs are pale green, four being the usual clutch, but six is often seen; both sexes take part in incubation. They nest early, and often bring up a second brood. They were found in company with *Demigretta* on the Capricorn Islands."

Mr. E. J. Christian says: "This is one of our most useful birds, as it feeds chiefly on swampy places where the mollusc lives, upon which the enemy of graziers, namely, the fluke, is found. In the north of Victoria it leaves us in the winter and returns later on. It is a great destroyer of grasshoppers. I have counted 48 birds in one flock. It can often be seen round dams catching Yabbies (Crayfish). The Yabbies tunnel through the banks of the dams and so cause leaks, so by killing these pests the birds do an immense amount of good.

"They often act as sentries for other birds, especially duck. I have noticed that when duck are feeding on the creek where they are concealed

THE BIRDS OF AUSTRALIA.

by banks or rushes, a Heron is frequently perched on the top of a dead tree near by. These birds make a harsh croaking noise."

Mr. Tom Carter informs me that they feed largely on crayfish in West Australia; the native name is "wyang," meaning shy or timid.

Mr. J. W. Mellor records: "The note of this Heron is a loud guttural croaking sound, and often made while the old birds are flying, especially should they be frightened suddenly. They have a practice of settling on the tops of the old, dry gums, where they have a good look out. They go in small flocks and breed in comparatively close quarters, as several nests are often placed in a single tree, when there are numbers of other trees about. While rearing their young they will fly long distances for food."

Mr. James M. Thomson sent me a nest of this species, with the following note: "Placed about twenty feet above water and contained three young, bluish, downy fledglings; one seemed much weaker than the other two, and frequently devoured food (a green, slimy matter) which the other two disgorged. All three had a yellow streak extending from under the lower mandible to the belly, down the neck. The adults wage war against the yabbies which make holes in the bank and so allow the water to run to waste."

"A constant resident here [Richmond District, North Queensland]. The numbers of this Heron do not seem to vary. It matters not what the season is like, or how many birds may come or go, you can never go out for a day's ride in the vicinity of water without seeing some of them. I have found three or four nests with eggs in February and March, and youngsters in the down in April, also a nest with eggs on 3rd September, 1903. The body of one that I secured at an Eagle-Hawk's nest had the stomach crammed with grasshoppers.*

"These birds take spells at sitting at about 6-hour intervals. They used to change about 9 a.m. and 3 p.m. When we were near the nest the returning bird would light in nest-tree or next one and give a croak; the other would get up and fly away, the relieving bird then going to nest.†

For the present I am considering the birds from the North-west of Australia and Northern Territory as being similar to those from the rest of Australia.

The bird figured and described is a male, collected at Grenfell, New South Wales, on July 29th, 1904.

* Berney, *Emu*, Vol. VI., p. 115, 1907.

† Ford, *ib.*, Vol. VIII., p. 31, 1908.

GENUS—MYOLA.

MYOLA Mathews, Austral Av. Rec., Vol. I., p. 195, 1913 Type *M. pacifica*.

ARDEINE birds, somewhat resembling *Notophoyx*, but differing in the nature of the breast-ornament, the longer, stouter bill, and longer legs.

The culmen is long and stout, less than one-fourth the length of the wing, and about one-half the length of the tail.

The wing is long, with the wing-formula similar to the preceding genus.

The tail is long and little less than half the length of the wing.

The legs are long, a long, exposed tibia being present; the metatarsus is nearly twice the length of culmen, and, as in *Notophoyx* and *Tonophoyx*, the regular transverse frontal scutella show little signs of breaking-up. The toes and interwebbing as in preceding genera.

I have noted how *Myola* can be separated from *Notophoyx* and *Tonophoyx* under the former genus.

MYOLA PACIFICA.

WHITE-NECKED HERON.

(PLATE 189.)*

ARDEA PACIFICA Latham, Index Ornith., Suppl., p. lxx., 1801; New South Wales.*Ardea pacifica* Latham, Index Ornith., Suppl., p. lxx., 1801; Jardine and Selby, Illus. Ornith., Vol. II., pl. 90, 1830; Gould, Birds Austr., Vol. VI., pl. 52, 1847; *id.*, Handb. Birds Austr., Vol. II., p. 297, 1865; Ramsay, Proc. Zool. Soc. (Lond.) 1877, p. 341; Williams, Papers and Proc. Roy. Soc. Tasm. 1876, p. 2, 1877; Bennett, Proc. Linn. Soc. N.S.W., Vol. VII., p. 324, 1882; Ramsay, Tab. List Austr. Birds, p. 21, 1888; North, Austr. Mus. Cat., no. 12, p. 317, 1890; Keartland, Trans. Roy. Soc. South Austr., Vol. XXII., p. 188, 1898.*Ardea bullaragang* Wagler, Syst. Av., Ardea, p. 175, sp. 5, 1827 (New South Wales).*Ardea bullaranjaus* Gray, in Griffith's ed. Cuvier's Anim. Kingd., Vol. VIII., p. 337, 1829.*Notophox pacifica* Sharpe, Bull. Brit. Ornith. Club, Vol. V., p. xi., 1895; Hall, Key Birds Austr., p. 98, 1899; Campbell, Nests and Eggs Austr. Birds, p. 955, 1901; Hall, Emu, Vol. II., p. 67, 1902; Le Souëf, *ib.*, p. 157, 1903; Hartert, Nov. Zool., Vol. XII., p. 204, 1905; Hall, Key Birds Austr., p. 98, 1906; Ingram, Ibis 1907, p. 394; Berney, Emu, Vol. VI., p. 115, 1907; Mathews, Handl. Birds Austral., p. 32, 1908; Ingram, Ibis 1909, p. 615; Mathews, Emu, Vol. IX., p. 67, 1909; Littler, Handb. Birds Tasm., p. 193, 1910; Ogilvie-Grant, Ibis 1910, p. 176; North, Austr. Mus. Sp. Cat., no. 1, Vol. IV., p. 27, 1913.*Notophox pacifica pacifica* Mathews, Nov. Zool., Vol. XVIII., p. 231, 1912.*Notophox pacifica alexandrae* Mathews, *ib.* (Alexandra, Northern Territory); *id.*, Austral Av. Rec., Vol. I., p. 55, 1912.*Myola pacifica* Mathews, List Austr. Birds, p. 82, 1913.

DISTRIBUTION. Australia; Tasmania.

Adult male, in breeding-plumage. Back, wings, scapulars, and tail greenish-black with elongated lanceolate plumes on the scapulars of deep maroon with dark slate-coloured tips, the feathers on the sides of the breast also deep maroon; the small coverts at the bend and outer margin of the wing, both above and below, pure white; bastard-wing, primary-coverts and quills greenish-black like the tail; head, including the long nuchal crest, and neck all round, white tinged with buff and sometimes with an irregular double line of dark spots down the middle of the fore-neck, with long ornamental lanceolate feathers on the lower* The Plate is lettered *Notophox pacifica*.



J. G. Keulemans, del.

Witherby & Co.

$\frac{1}{4}$
NOTOPHOYX PACIFICA.
(WHITE-NECKED HERON).

WHITE-NECKED HERON.

fore-neck white tinged with buff; the feathers on the breast white broadly margined with deep maroon, while on the abdomen and under tail-coverts the margins are dark brown; sides of body and axillaries slate-grey; under wing-coverts also dark slate-grey with a few white feathers intermixed. Bill black, base of lower mandible yellow; eyes and orbits yellow; feet black. Total length 775 mm.; culmen 83, wing 413, tail 170, tarsus 135.

Adult female. Similar to the adult male.

Immature male of the year. Differs from the adult chiefly in the entire absence of ornamental plumes both on the back and fore-neck; the margins on the feathers of the under-surface grey instead of dark brown.

Birds of the second year have the ornamental feathers on the back similar to those of the adult, but the feathers on the breast are like those of the immature bird of the first year.

Very old birds appear to have the white shaft-streaks to the feathers narrower than in the younger birds.

I find the dark feathers on the middle of the fore-neck to be a variable character.

Fledgling, with down still on some of the feathers. Resembles the immature male described above, but has more white on the wing, the head buff, and the feathers on the lower-neck white, with a subterminal band of dark brown.

Nest. Roughly constructed of sticks placed high up in a tree.

Eggs. Clutch, four; uniform pale green; axis 58-59 mm., diameter 39.

Breeding-season. September to January usually, but practically all the year round.

MR. J. P. ROGERS found these birds far from rare in the North-west of Australia. Many nests were located, some in the fork of a thin, horizontal limb, about twenty-five feet from the ground, others about forty feet up—all placed in coolibah trees; the clutch was three to four. When one of the birds was on the nest the other was frequently perched on a limb close by.

Captain S. A. White says: "These birds are not numerous anywhere, but are scattered over the whole of South Australia. It always nests on the Adelaide Plains during wet winters, but never in any numbers."

Mr. Tom Carter records: "Seen throughout the State of West Australia. It feeds at fresh-water pools, and also on the sea-beach. It is usually exceedingly wary and difficult to approach. On one occasion, December 12th, 1912, I had two long shots at a pair in the flooded swamp inland from Point Cloates. They were unhurt and rising in the air they gradually ascended in great spirals until they appeared as mere specks in the sky, then they flew straight away eastwards. I imagined they attained that height in order to locate the next large sheet of water, which was about thirty miles to the east. They are found in the south-west as well."

Mr. J. A. Sandland sends me the following: "Seen after rains, and sometimes previous to them. On one occasion I found a nest near Burra, South Australia, built in a patch of star-thistles near the ground."

Mr. J. W. Mellor reports: "This fine Heron is a very conspicuous object as it wades about the swamps or stands erect upon the dead tops of a high

THE BIRDS OF AUSTRALIA.

gum-tree. It will also sit upon the top of the posts of a fence, and in this position where several occupy similar portions they appear like a line of soldiers with their dark uniforms, with white neck and head-dresses. They come about in autumn, when the early floods are due, stay the winter and depart. They are more often seen singly or in pairs, but on occasions congregate in small flocks where food is plentiful. They mix with, and live on the same food, as the preceding species, but are much more conspicuous on account of their size."

"Their strange habit of standing motionless in the swamps or on trees near the water rendered their long white necks a marked feature of the locality. Their food consisted of water-beetles and small fresh-water snails."*

"More likely to be seen during the period of the summer rains than any other time [in Richmond District, North Queensland]. My only record of a nest, a solitary one in a smooth, white-barked gum (*Eucalyptus rostrata*) on the Flinders River, is on 16th June; it contained three youngsters in the down. I never saw these Herons congregate in any way. Generally they are alone, two at most on a hole."†

The bird figured and described is an old male, collected in New South Wales; the birds from the Northern Territory and North-west Australia are, for the time being, considered to be similar.

* Kearnland, *Trans. Roy. Soc. South Austr.*, Vol. XXII., p. 188, 1898.

† Berney, *Emu*, Vol. VI., p. 115, 1907.

GENUS—TONOPHOYX.

TONOPHOYX Mathews, Austral Av. Rec., Vol. I., p. 195,

1913 Type *T. aruensis*.

ARDEINE birds dissimilar to the two preceding genera in coloration, but having similar dorsal and breast-ornaments. The nuchal crest is however very much elongated, while the lanceolate breast-feathers form a much more dense ornamentation.

The birds are smaller and the culmen is proportionately much longer and stouter; it is much longer than one-fourth the length of the wing and almost as long as the tail. The wing has much the same formula, which appears to occur throughout the *Ardeidae* with very little variation.

The tail is long, more than one-third the length of the wing.

The legs are long and the metatarsus nearly equals the tail in length while it does not greatly exceed the culmen.

The toes are typically Ardeine.

I have indicated the differences between this genus and *Notophoyx* and *Myola*, and would emphasize the extraordinary distinction between the immature of this genus and those of the others, as showing that there is probably very little close relationship between this and the other species with which it has been hitherto associated.

TONOPHOYX ARUENSIS FLAVIROSTRIS.

PIED EGRET.

(PLATE 190.)*

NOTOPHOYX FLAVIROSTRIS Sharpe, Cat. Birds Brit. Mus., Vol. XXVI., p. 654, 1898 ;
Port Essington, Northern Territory.

Ardea (*Herodias*) *picata* (not Raffles 1820) Gould, Proc. Zool. Soc. (Lond.) 1845, p. 62
(Port Essington).

Herodias picata Gould, Birds Austr., Vol. VI., pl. 62, 1846 ; *id.*, Handb. Birds Austr.,
Vol. II., p. 306, 1865 ; Ramsay, Tab. List Austr. Birds, p. 21, 1888.

Ardea picata Gray, Genera Birds, Vol. III., App., p. 25, 1849.

Agamia picata "Reich." Bonaparte, Consp. Gen. Av., Vol. II., p. 120, 1855.

Notophoyx picata Sharpe, Bull. Brit. Ornith. Club, Vol. V., p. xi., 1895 ; Hartert, Nov.
Zool., Vol. XII., p. 204, 1905.

Notophoyx flavirostris Sharpe, Cat. Birds Brit. Mus., Vol. XXVI., p. 654, 1898 ; Hall,
Key Birds Austr., p. 99, 1899 ; Campbell, Nests and Eggs Austr. Birds, p. 957,
1901 ; Oates, Cat. Birds Eggs Brit. Mus., Vol. II., p. 119, 1902 ; Hall, Key Birds
Austr., p. 99, 1906 ; Mathews, Handl. Birds Austral., p. 32, 1908 ; *id.*, Emu,
Vol. IX., p. 56, 1909 ; *id.*, *ib.*, Vol. X., p. 105, 1910 ; *id.*, Nov. Zool., Vol. XVIII.,
p. 231, 1912.

Tonophoyx aruensis flavirostris Mathews, List Birds Austr., p. 82, 1913.

DISTRIBUTION. North Queensland ; Northern Territory ; North-west Australia.

Adult male. Crown of head, sides of face, and nuchal crest slaty-black like the lower
hind-neck, back, wings, tail, and entire under-surface, with ornamental lanceolate
plumes on the upper-back ; throat and entire fore-neck white. Bill yellow,
lores and base of upper mandible slaty-brown ; eyes yellow ; feet and legs
olive-yellow. Total length 475 mm. ; culmen 68, wing 233, tail 84, tarsus 79.

Adult female, in breeding-plumage. Similar to the male.

Young birds have the coverts on the outer margin of the wing more or less white, as
also the feathers on the middle of the abdomen.

Immature. Head, nuchal crest, and neck all round white like the breast, middle of
abdomen, and under tail-coverts, the latter more or less grey at the tips ; back,
wings, and tail bluish slate-colour ; the coverts round the bend of the wing
broadly tipped with white ; sides of the body, thighs, axillaries, and under wing-
coverts dark slate-colour, similar to the upper-surface.

Nest. Not described.

* The Plate is lettered *Notophoyx flavirostris*.



J.G. Keulemans, del.

Witherby & C^o

$\frac{2}{5}$

NOTOPHOYX FLAVIROSTRIS.
(PIED EGRET).

PIED EGRET.

Eggs. Clutch ? ; uniform pale green ; axis 41 mm., diameter 35.

Breeding-season. Not recorded.

MR. J. P. ROGERS, writing from Wyndham, North-west Australia, says he saw the first two birds on October 24th, 1908, and by December a large flock had arrived, after the rain, but no birds were seen near Derby. They were also collected on Melville Island and on Hall's Creek, North-west Australia, during March and April, 1909 ; and I have a very nice adult male from Cape York given me by Dr. William Macgillivray.

The immature spoken of by Gould as belonging to this species is undoubtedly so, and Sharpe was wrong in considering it an adult.

The immature have the nuchal crest small and white ; the feathers on the back of the head first become dark bluish-grey, the forehead still being white ; in the next stage the forehead and under-surface become slaty-black.

The adult bird figured and described was collected at Parry's Creek, North-west Australia, on March 28th, 1909, by Mr. J. P. Rogers.

In the *Proc. Zool. Soc.* (Lond.) 1858, p. 188, Gray described a bird as *Ardea aruensis*. In the *Catalogue* of the Birds in the British Museum, Vol. XXVI., p. 113, 1898, Sharpe, concluding this was adult on account of the presence of a crest, kept it quite distinct from Gould's *Ardea picata* and figured it on pl. 1B. The receipt of many specimens from Australia has shown this conclusion to be incorrect and that the coloration of *A. aruensis* is immature. Van Oort has arrived at the same results from an investigation of New Guinea (*Nova Guinea*, Vol. IX., p. 541, 1909) birds, so that *A. aruensis* Gray and *A. picata* Gould are undoubtedly conspecific. Gould's name is older but it is preoccupied, and Sharpe's new name of *flavirostris* is considerably antedated by Gray's name. The few specimens I have been able to examine show the Aru bird to be darker, but the species-name is *aruensis*, the Australian bird being only separable as a subspecies with the name here used.

GENUS—DEMIGRETTA.

DEMIGRETTA Blyth, Journ. As. Soc. Bengal, Vol. XV.,
p. 372, 1846 Type *D. concolor*.

Also spelt—

Hemi-egretta Bonaparte, Consp. Gen. Av., Vol. II., p. 120, 1855.
Demiegretta id., ib., p. 121.

ARDEINE birds with long bill, long wings, short tail, and comparatively short legs and short toes.

The head bears a short crest; lanceolate dorsal plumes are present, as are also lanceolate breast-plumes.

The culmen is very long, exceeding the metatarsus in length and about equal to the tail.

The wing has the second and third primaries subequal and longest.

The tail is composed of twelve feathers and is about one-third of the wing in length.

The dorsal plumes are lanceolate, showing little disintegration and never extending beyond the tail.

The legs are short; the exposed tibia is comparatively much shorter than in any of the preceding Ardeine genera; the metatarsus is shorter in length than the culmen while the toes are noticeably short.

The diagnostic feature of the genus *Demigretta* is the conjunction of very long bill with short legs, so that the length of the bill exceeds that of the metatarsus; the short toes and breeding-ornaments are aids to differentiation.

In the *Catalogue* of the Birds in the British Museum, Vol. XXVI., Sharpe doubtfully synonymised with *Demigretta sacra*, the bird described by Swinhoe as *Herodias eulophotes* (*Ibis* 1860, p. 64). He carefully noted that he had only two specimens, and that these showed features which might later gain the species acceptance. There is now in the British Museum a fair series of this species, and as I have not noted recent discussion it seems well to record that not only is *Herodias eulophotes* Swinhoe quite distinct from *Demigretta* "*sacra*," but in view of the minute differences regarded as sufficient for generic distinction in this group, it cannot be even considered congeneric with *D. sacra*. I therefore propose for *Herodias eulophotes* Swinhoe the new generic name *HEMIGARZETTA*.

DEMIGRETTA.

It recalls *Egretta* almost as much as *Demigretta*.

The bill is long and slender *but does not exceed the metatarsus in length*; the head is very fully crested with very much developed plumes: *the dorsal ornamentation reaches beyond the tail and consists of disintegrated feathers*; the breast-plumes are lanceolate but are longer than in *Demigretta* and much more pronounced; the wing has the first three primaries subequal, the first primary often longest, which never occurs in *Demigretta*. The legs are short with exposed tibia, also short, as are also the toes. The short legs and feet place it near *Demigretta*, as *Egretta* has long legs and feet. The metatarsus frontal covering is transverse scutes as in *Demigretta* as well as *Egretta*.

DEMIGRETTA MATOOK COOKTOWNI.

BLUE REEF-HERON.

(PLATE 191.)*

DEMIGRETTA SACRA COOKTOWNI Mathews, Nov. Zool., Vol. XVIII., p. 232, 1912; Cooktown, Queensland.

Herodias jugularis (not Forster) Gould, Birds Austr., Vol. VI., pl. 60, 1848.

Demigretta jugularis Gould, Handb. Birds Austr., Vol. II., p. 307, 1865; Ramsay, Proc. Zool. Soc. (Lond.) 1877, p. 342; Walker, Ibis 1892, p. 257.

Demigretta sacra (not Gmelin) Ramsay, Tab. List Austr. Birds, p. 21, 1888; North, Austr. Mus. Cat., no. 12, p. 319, 1890; Le Souëf, Ibis 1895, p. 422; Sharpe, Cat. Birds Brit. Mus., Vol. XXVI., p. 137, 1898; Hall, Key Birds Austr., p. 99, 1899; Campbell, Nests and Eggs Austr. Birds, p. 959, 1901; Carter, Emu, Vol. III., p. 210, 1904; Hartert, Nov. Zool., Vol. XII., p. 204, 1905; Hall, Key Birds Austr., p. 99, 1906; Austin, Emu, Vol. VII., p. 176, 1908; Mathews, Handl. Birds Austral., p. 33, 1908; Littler, Handb. Birds Tasm., p. 194, 1910; Campbell and White, Emu, Vol. X., p. 203, 1910; Ogilvie-Grant, Ibis 1910, p. 176; North, Austr. Mus. Sp. Cat., no. 1, Vol. IV., p. 30, 1913.

Demigretta sacra cooktowni Mathews, Nov. Zool., Vol. XVIII., p. 232, 1912 (Cooktown); *id.*, List Austr. Birds, p. 83, 1913.

Demigretta sacra tormenti Mathews, Nov. Zool., Vol. XVIII., p. 232, 1912 (Point Torment, North-west Australia).

DISTRIBUTION. Australia; Tasmania.

Adult male. General colour, both above and below, uniform light slate-grey with a narrow white streak on the chin and throat; the ornamental plumes on the back are composed of elongated lanceolate feathers, little disintegrated; a slight nuchal crest, and the ornamental plumes on the lower fore-neck similar in shape to those on the back but not so long. Bill slaty-brown; iris yellow; feet and tarsi olive-green. Total length 590 mm.; culmen 88; wing 256; tail 88; tarsus 76.

Adult female. Similar to the adult male.

Immature birds are lighter in colour than adults.

Nest, Eggs, and Breeding-season are similar to *D. greyi*.

* The Plate is lettered *Demigretta tormenti*.



J G. Keulemans, del.

Witherby & Co.

$\frac{1}{3}$

DEMIGRETTA TORMENTI.
(WESTERN BLUE REEF-HERON)

BLUE REEF-HERON.

CAPTAIN S. A. WHITE says: "I had always grave doubts about the Blue and White Reef Herons being the same species, and since my visit to the Capricorn Group, where they were nesting in great numbers, I feel almost sure they are distinct, for I flushed the blue variety from large young which were of a decidedly dark colour; while all the nests from which white birds were flushed contained white young. I also noticed a nest of the White Bird in a bush made of sticks and placed about 30 inches off the ground; this was the only nest on the island not placed on the ground.

"Later a rookery was discovered of both White and Blue birds, the nests were all placed on the ground, under a dense mass of undergrowth of creepers, etc. Some nests were within a yard or two of high-water mark, while others were 100 yards away. The nests, which were a rude collection of sticks, were placed close to one another, mostly 20 to 30 yards apart. The clutches were from two to three. The young birds invariably left the nest on the least sound and hid in the undergrowth. The adults frequented the sandy beach or perched on the dead trees; when the tide was out they were plentiful on the reef in search of food, which seemed to consist of crabs, etc. The bills of some birds were quite worn down from probing in the coral. When procuring their food their call is a harsh one like others of the family. When they leave the nest they run with great rapidity, dodging in and out among the bushes and under the undergrowth till they reach the beach where they take flight."

Mr. Edwin Ashby tells me he found a nest with five eggs in it on an isolated islet in St. Georges River, North Kangaroo Island, in October, 1905; the nest was placed on the ledge of a precipitous rock about 40 feet from sea level.

Mr. J. W. Mellor says he only noticed dark birds breeding on a rocky islet off the north of Kangaroo Island. And on the Capricorn Group white birds breed only with white, and blue ones only with blue; also that the young were always the same colour as the parents. They are always on the move when searching for food, and wade knee deep while doing so.

Mr. Tom Carter sends me the following: "The black's name is Kooroodoo, a common species about the North-West Cape, white specimens living and breeding with the grey ones, but not so numerous in numbers. At a certain part of the vast cliffs at the Yardie Creek, where ledges of rock overhang the tidal waters, there was always a colony of these birds breeding, and I frequently climbed down to examine the nests. A few pairs usually made their nests on the tops of low bushes (called by the blacks Toondurrarea) growing on Fraser Island near Point Cloates. On October 25, 1902, I examined a nest there which contained two white

THE BIRDS OF AUSTRALIA.

immature birds, and the parent birds were also white. I am practically certain that they interbreed. August 5, 1894—nest with two eggs; also on August 26, 1894, a nest with three eggs, a blue and a white bird being near it (the only ones).—September 25, 1894: found a nest on Fraser Island with one egg, from which a white bird flew.—June 24, 1896: shot a blue and a white bird that were feeding together, apparently mated; no others near.—September 6, 1901: a nest with three eggs, having blue and white parent birds; white female and blue male shot off it.—September 1, 1901: nest with three eggs on high sandstone cliff on beach near Mauds Landing (North-west), white male and blue female.—December 14, 1896, saw fledged birds (blue) at Fraser Island. I have a skin of the white form from a bird shot at Albany by Captain Winger, the Harbour Master, who kindly forwarded it to me as a rarity. Many of the feathers of the mantle and scapulars have streaks of blue-grey irregularly placed near the extremities.”

Ramsay (*Proc. Zool. Soc. (Lond.)* 1877, p. 342), says: “From an examination of a fine series of these birds . . . I quite concur with Mr. Gould’s and Mr. Masters’ opinion [that the blue and the white birds are the same]. Remains of the slaty-blue being found on the primaries and wing-coverts of some of the white birds tend to prove *D. greyi* is but the adult of *D. jugularis*.”

“Mr. Walker (*Ibis* 1892, p. 257) says the birds from Adèla Islands, North-west Australia, are of a peculiar light greyish ochreous tint.” This I find to be so.

Mr. Atkinson (*Austr. Mus. Cat.*, no. 12, p. 319) records the mating of a blue and a white bird in Tasmania.

“Some of these nests appear to have been built year after year, a few of them standing from 3 to 4 feet high, others being only a few sticks on a bough of a low tree or between large rocks.”*

“In one nest I saw two young nearly fledged, one being snow white, the other slaty-black plumage. In one other case I saw an adult bird of each coloured plumage attending to a nest with three young, all of which were of the slaty-black plumage. Both male and female assist in feeding the young, but this only takes place at low tide; at high tide the birds are to be seen perched on rocks just above the water. Their call note is nothing more than a grunt.

“When it flies it draws back its head, as it were, between its shoulders, so that the neck presents an arched appearance, with the concavity downwards and forwards.”†

* Austin, *Emu.*, Vol. VII., p. 176, 1908.

† *id.*, *Austr. Mus. Sp. Cat.*, no. 1, Vol. IV., p. 32, 1913.

BLUE REEF-HERON.

The bird figured and described is a male, collected at Point Torment, North-west Australia, on March 7th, 1911, by Mr. J. P. Rogers.

In the *Catalogue* of the Birds in the British Museum, Vol. XXVI., Sharpe lumped all the Reef-Herons, from India to Tahiti and up to China, under the specific name *Demiegretta sacra*, based upon the *Ardea sacra* Gmelin (*Syst. Nat.*, p. 640, 1789). This depends solely upon the Sacred Heron of Latham (*Gen. Synops. Birds*, Vol. III., pt. I., p. 92, 1785), which is thus described:—

“Size of the little *Egret*? length two feet three inches. General colour of the plumage white; bill four inches long, dusky brown; on the middle of the crown a few obscure dusky streaks down the shafts of some of the feathers; several of those of the back, wing, and tail-coverts marked in the same manner; scapulars dashed with black; greater quills more or less dusky at the tips; the tail-feathers marked with dusky down the shafts, from the tip, an inch and a half upwards, except the outer feather, which is plain; legs yellow.

“Inhabits *Otaheite*, and the neighbouring isles, where it is held sacred.

“In the collection of Sir *Joseph Banks*.

“*Var. A.* With the above is one not far different. The crown of a plain white; scapulars some white, some black; on the fore part of the neck, some loose long feathers, black and white mixed, hanging over the breast; and some others of the same loose texture, and mixed colours, falling on the tail; the wing-coverts have likewise some black feathers intermixed; the quills plain white; and the tail the same, except one feather wholly black; legs black.”

This description seems inapplicable inasmuch as it is that of a hybrid; if the dark birds and the white ones be considered identical, then it might be used, but even then it is quite a mixed bird that is described.

Sharpe considered all the Reef-Herons to be dimorphic, and consequently made use of the name without investigating the question of subspecies whatever.

If all the dark birds lumped under the one specific name by Sharpe be laid out according to localities, the merest glance will show that some strongly-marked subspecies are recognisable, while it is just as certain that long series will show many subspecies not so easily noted.

In the case of these dark birds, the New Zealand race is clearly defined by means of its coloration, and the Australian form is also at once noticeable.

White birds do not, of course, show any variation in coloration, and, if considered dimorphisms, would have to follow their dark forms.

THE BIRDS OF AUSTRALIA.

I have critically examined the accumulation of these birds at the British Museum and at the Rothschild Museum, Tring, and I do not consider the facts to be clearly expressed by the acceptance of one specific entity. I would consider the recognition of two species to more nearly suggest the truth. I was impressed by the fact that the interbreeding of the dark and white forms has been so much discussed, that every collector has obtained, if possible, a specimen showing such interbreeding in its plumage; yet these are comparatively few, and some noticeable points can now be formulated.

As first suggested, the white is neither the adult nor juvenile of the dark form, but is quite a fixed albinism, breeding true; when it does interbreed we find recorded pure white and dark young in the nest, all dark young, or all pure white in the nest. The collected birds which, it is suggested, prove the dimorphism of the species, are nearly all white with odd dark feathers. Very rarely are dark birds with a few white feathers recorded or collected. This is suggestive. From many localities no interbreeding, or very little, is known; while in some few localities quite a considerable amount of interbreeding takes place, but even then it is to quite a limited extent.

Now, if these were simply dimorphisms, interbreeding would be the rule, not the exception; we should find every variation of plumage in a colony, and have a large number of birds with the dark colour predominating. This is not the case, *and in New Zealand the white bird does not occur at all*, while to the North of this place the most pronounced cases of interbreeding occur.

The interbreeding of the Carrion-Crow and the Hooded Crow has attracted the attention of many European ornithologists, yet these are admitted to be distinct species.

I conclude that these dark and white Herons constitute a parallel case, and am recognising two species, and consider the birds showing mixed plumage should be ranked as hybrids. This conclusion forces the rejection of *Ardea sacra* Gmelin, as being based upon a hybrid.

The next name to be considered is *Ardea novæ-guinææ* Gmelin (*Syst. Nat.*, p. 644, 1789; New Guinea), which must also be considered too doubtful to use. The figure is too bad for accurate determination, and the length is given as "10 pollices longa."

We must next investigate the name *Ardea matook* Vieillot (*Nouv. Dict. d'Hist. Nat.*, Vol. XIV., p. 416, 1817), which is thus introduced: "*Ardea matook*, Vieill., se trouve à la Nouvelle Hollande, sur les rivages du Canal de la Reine Charlotte, où il porte le nom que nous lui avons conservé. Il est de la taille du *crabier bleu à cou brun*, auquel Latham le rapporte. Le *matook* a le bec, l'iris, le *lorum* et les pieds jaunes; la gorge blanche; les

BLUE REEF-HERON.

plumes de la tête peu allongées ; le reste du plumage d'un bleu vert pâle."

Latham's description (*Gen. Synops. Birds*, Vol. III., pt. I., p. 79, 1785) reads: "Size of the last; length eighteen inches. Bill, two inches and a half; colour, yellow; the bare skin between that and the eye the same; the irides also pale yellow; the head feathers loose, and somewhat elongated at the back part; general colour of the plumage pale blue-green; chin and throat white; legs yellow; claws black.

"Inhabits Queen Charlotte's Sound, where the natives call it Matoók."

It should be noted that Latham makes this a var. B. of his Blue Heron from America, but to which he adds a note: "It has also been met with at Otaheite, and other islands of the *South Seas*, where it is much respected."

The only fault in this description is that of the coloration, which can never be described as "pale blue-green"! The explanation of this error is, that Latham drew up his account from an unfinished drawing made by G. Forster. The same bird was well described by J. R. Forster at the time, but his description did not appear until 1844, when Lichtenstein edited his *Descr. Anim.* A full account is given under the name *Ardea jugularis* (p. 172). I think that *Ardea matook* might be used for the dark birds as the specific name: it has long been recognised as applicable.

As before noted, many subspecies will later be recognised, as the New Zealand birds are very dark—darker than the Society Island and Fijian birds, while the Australian birds are lighter than the latter. Long series, correctly sexed, are absolutely necessary to determine the limits of the other races, and these are not available at the present time.

I separated the Australian bird in the *Nov. Zool.*, Vol. XVIII., p. 232, 1912, on account of the coloration, and noted its shorter tarsi, and also admitted the North-western form on its paler coloration. I have indicated that all Australian birds are paler than extra-Australian ones, and I am simply uniting the North-western with the Eastern one in the present work, but I am certain longer series will force the reinstatement of the former.

Order ARDEIFORMES

Family ARDEIDÆ.

No. 241.

DEMIGRETTA GREYI.

WHITE REEF-HERON.

(PLATE 192.)

HERODIAS GREYI Gould, Birds Austr., Vol. VI., pl. 61, 1848; Raine Island, North Queensland.

Herodias greyi Gould, Birds Austr., Vol. VI., pl. 61, 1848.

Demiegretta greyi id., Handb. Birds Austr., Vol. II., p. 309, 1865.

Demigretta sacra greyi Mathews, Nov. Zool., Vol. XVIII., p. 232, 1912.

Demigretta sacra buchanani Mathews, Austral Av. Rec., Vol. I., p. 85, 1912 (Buchanan Island).

Demigretta greyi Mathews, List Austr. Birds, p. 83, 1913; *id.*, Ibis 1914, p. 106.

DISTRIBUTION. Australia; Tasmania.

Adult male. The entire plumage uniform white above and below, with long lanceolate ornamental feathers on the back which are little disintegrated in texture. A nuchal crest and ornamental feathers on the lower fore-neck. Bill yellow; iris yellow, orbits and lores greenish-yellow; feet olive-yellow; tarsi and lower tibia olive-green; soles orange. Total length 566 mm.; culmen 85, wing 269, tail 97, tarsus 67.

Adult female. Similar to the adult male.

Nest. Placed on the ground and composed of sticks, piled in some instances a foot high, and lined with fine twigs.

Eggs. Clutch, two to five, uniform pale green; axis 43 mm., diameter 34.5.

Breeding-season. September and October to January, but practically all the year round.

Under the previous species I have discussed the Gmelinian name, *Ardea sacra*, and advocated its rejection, as I conclude that the dark and white birds associated by Sharpe in the *Catalogue* of the Birds in the British Museum, Vol. XXVI., under the name *Demiegretta sacra* (Gmelin), are really referable to two species, and that as Gmelin's name was given to a hybrid, it cannot be used.

No field-worker yet has given the attention to this subject that it deserves, the few notes and opinions cited under the preceding species covering most that has been done.



J.G. Keulemans, del.

Witherby & Co.

$\frac{1}{3}$
DEMIGRETTA GREYI.
(REEF-HERON).

WHITE REEF-HERON.

Yet it would seem a most interesting problem to investigate, and, by means of careful examination, give to science the number of birds in a breeding-colony, the proportion of dark-coloured to white birds, the manner in which they mate, and state of the young in the nests when differently coloured birds mate.

It should be recollected that at one time the white birds were thought to be the adult stage of the dark ; at another the reverse was suggested ; while at the present time both these views are known to be incorrect. It now remains to be proven whether the view taken by Sharpe, or the one I here adopt, is the right one, but all the facts seem to point to the latter. It is now necessary to make accurate detailed investigations—mere opinions are quite valueless.

The bird figured and described is a male, collected on the Namoi River, New South Wales, in May, 1893.

GENUS—NYCTICORAX.

- NYCTICORAX Forster, Synopt. Cat. Brit. Birds, p. 59,
 1817 Type *N. nycticorax*.
Nyctiardea Swainson, Classif. Birds, Vol. II., p. 354,
 1837 Type *N. nycticorax*.
Scotæus Keyserling und Blasius, Wirbelth. Europa's,
 pp. lxxx., 220, 1840 Type *N. nycticorax*.
Nycterodius Macgillivray, Manual Brit. Ornith., Vol. II.,
 p. 126, 1842 Type *N. nycticorax*.

ARDEINE birds with stout deep bill, comparatively short neck, long wings, long tail, comparatively short legs but long toes.

The birds of this genus differ from all those hitherto treated of in this family in their stout build: the very deep stout bill and short legs being characteristic.

There are two or three very long crest-feathers in the breeding-season, but no dorsal or breast-ornaments.

The culmen is comparatively long, very stout and deep, its depth being more than one-fourth its length; there is the typical ardeine notch towards its point and obsolete serrations may be observed upon the edges of the upper mandible; in general structure the bill is quite typically ardeine.

The culmen is slightly exceeded by the metatarsus in length and is about one-fourth the length of the wing.

The wing has the first four primaries subequal, the second or third longest.

The tail is composed of twelve feathers and is more than one-third the length of the wing and longer than the metatarsus.

The legs are comparatively short, the exposed tibia being short; the frontal covering of the metatarsus is composed of hexagonal scales, that is, the metatarsus is reticulate before and behind. The toes are comparatively long with the typical ardeine interwebbing.



J. G. Keulemans, del

Witherby & Co.

$\frac{1}{3}$
NYCTICORAX AUSTRALASIE.
(NIGHT-HERON).

NYCTICORAX CALEDONICUS HILLI.

NIGHT-HERON.

(PLATE 193.)*

NYCTICORAX CALEDONICUS HILLI Mathews, Nov. Zool., Vol. XVIII., p. 233, 1912 ;
Parry's Creek, North-west Australia.

Ardea maculata (not Gmelin) Latham, Index Ornith., Suppl., p. lxiv., 1801 (New South
Wales).

Nycticorax caledonicus (not Gmelin) Gould, Birds Austr., Vol. VI., pl. 63, 1848 ; Sturt,
Narr. Exp. Centr. Austr., Vol. II., App., p. 52, 1849 ; Propsting, Pap. and Proc.
Roy. Soc. Van Diemen Land, Vol. II., p. 149, 1852 ; Gould, Handb. Birds Austr.,
Vol. II., p. 311, 1865 ; Buller, Birds New Zeal., p. 233, 1873 ; Ramsay, Proc. Zool.
Soc. (Lond.) 1877, p. 342 ; *id.*, Proc. Linn. Soc. N.S.W., Vol. VII., p. 55, 1882 ;
id., Tab. List Austr. Birds, p. 21, 1886 ; Buller, Birds New Zeal., 2nd ed., Vol. II.,
p. 139, 1888 ; North, Austr. Mus. Cat., no. 12, p. 320, 1890 ; *id.*, Rep. Horn Sci.
Exp., Zool., p. 105, 1896 ; Keartland, Trans. Roy. Soc. South Austr., Vol. XXII.,
p. 188, 1898 ; Sharpe, Cat. Birds Brit. Mus., Vol. XXVI., p. 158, 1898 (pars) ;
Hall, Key Birds Austr., p. 99, 1899 ; Robinson and Laverock, Ibis 1900, p. 652 ;
Campbell, Nests and Eggs Austr. Birds, p. 962, 1901 ; Le Souëf, Emu, Vol. I.,
p. 146, 1902 ; Hall, *ib.*, Vol. II., p. 67, 1902 ; Carter, *ib.*, Vol. III., p. 210, 1904 ;
Hartert, Nov. Zool., Vol. XII., p. 204, 1905 ; Hall, Key Birds Austr., p. 99, 1906 ;
Berney, Emu, Vol. VI., p. 115, 1907 ; Mathews, Handl. Birds Austral., p. 33, 1908 ;
Ingram, Ibis 1908, p. 464 ; *id.*, *ib.* 1909, p. 615 ; Mathews, Emu, Vol. IX., p. 4,
1909 ; *id.*, *ib.*, p. 67 ; Ogilvie-Grant, Ibis 1910, p. 175 ; Mathews, Emu, Vol. X.,
p. 105, 1910 ; Littler, Handb. Birds Tasm., p. 195, 1910 ; North, Austr. Mus. Sp.
Cat., no. 1, Vol. IV., p. 33, 1913.

Nycticorax caledonicus australasiæ (not Vieillot) Mathews, Nov. Zool., Vol. XVIII., p. 232,
1912 ; *id.*, List Birds Austr., p. 83, 1913 ; *id.*, Ibis 1914, p. 106.

Nycticorax caledonicus hilli Mathews, Nov. Zool., Vol. XVIII., p. 233, 1912 (Parry's Creek).

DISTRIBUTION. Australia ; Tasmania.

Adult male. General colour above cinnamon-chestnut, including the sides of the neck,
hind-neck, entire back, wings, and tail, paler and inclining to whitish on the

* The Plate is lettered *Nycticorax australasiæ*.

THE BIRDS OF AUSTRALIA.

outer edge of the wing and on the inner webs of the primaries, which are dusted with white and grey. Sides of face, eyebrow, and a narrow band on the forehead paler chestnut; throat whitish more or less washed with chestnut; sides of the breast like the sides of the neck; remainder of the under-surface pure white; axillaries and under wing-coverts white slightly tinged with chestnut; head and nuchal crest black; the two long nuchal feathers, 240 mm. in length, are pure white. Bill black; eye yellow; lores and skin round the eye yellowish-green; feet olive-yellow. Total length, 550 mm.; culmen 66, wing 295, tail 104, tarsus 85.

Adult female. Similar to the adult male.

Young. Upper-surface dark brown, the feathers mottled with rufous and large flecks of white on the back and wings; the quills and tail-feathers rufous mottled with dark brown and tipped with white, the rufous somewhat brighter on the upper wing-coverts; the feathers of the head, long and narrow, are white or buffy-white, with black margins, giving a broadly streaked appearance; the sides of the neck and under-surface of the body paler and more coarsely marked; chin and throat white, with a few ovate spots of brown.

Immature. This stage of the plumage is becoming more rufous, the flecks on the upper-surface are sandy-buff, the head is uniform black and the white eyebrow is conspicuous, the hind-neck is becoming rufous, and the sides of the neck and fore-neck more buff, and the dark markings on the lower-abdomen and under tail-coverts almost obsolete.

Immature (older). This plumage is showing a great tendency of the feathers to become uniform, a large number have lost the mottlings and flecks; this may be noticed more particularly on the quills and tail-feathers. The head is uniform black, and the eyebrow more or less mixed with brown, the pattern of the feathers on the under-parts is much coarser, and has lost its regularity.

Immature (older still). This plumage is much more uniform rufous above, with a wash of dirty-brown on the back, the pale flecking on the wings almost obsolete, the pattern on the abdomen has almost vanished, and the under-surface become uniform buffy-white, and the eyebrow is uniform white.

Nearly adult. This example is almost in the adult or breeding-plumage, having become nearly uniform rufous above, with the exception of a little remains of white flecking on the wings. The white nape-plumes are absent.

Fledgling, with down still adhering to the feathers. General colour of the upper-surface buff and dark brown; the feathers dark brown with buff centres, which are narrow on the head and much broader on the back and wings, where they are oval or fan-shaped; bastard-wing dark brown, rufous, and white more or less in the form of bars; primary-coverts similar, but more rufous and the white restricted to the tips; primary-quills rufous mottled and barred near the tips with dark brown, and tipped with white; secondaries similar but more mottled with brown, and the rufous less bright; the long scapulars very similar, but darker and less rufous; tail dull rufous with a subterminal dark bar and white tip; the sides of the face buff, streaked with pale brown; throat and fore-neck white, tinged with buff on the margins of the feathers, giving a streaked appearance; breast, abdomen, sides of the body, axillaries, and under wing-coverts similar, but not quite so buff. Bill black above, greenish-yellow below; eyes bright lemon-yellow; feet pale green.

Nest. Loosely constructed of sticks, mostly overhanging water.

Eggs. Clutch, two to four; uniform pale green; axis 54-55 mm., diameter 36.7.

Breeding-season. September to January usually, but practically all the year round.

NIGHT-HERON.

MR. J. P. ROGERS found the birds common in North-west Australia. They were seen fishing after sunrise and up till ten o'clock on bright hot and calm days. They perched on some rocks on the water's edge and when a fish came to the surface, as far as ten feet away in deep water, a bird would fly out and alight on the water, making a snap at the fish as it did so; the wings were kept raised, and the bird only stayed a second or two on the water and then flew back to the rocks. When drinking in the hot weather one was observed to do so very slowly, taking a sip at about one minute intervals. They were also found on Melville Island.

Captain S. A. White says: "From the time my grandfather took up this piece of country (before the Colony was proclaimed) these interesting birds were constant residents at the 'Reedbeds.' I say constant because never at any time are they absent altogether. They were always to be observed in the daytime roosting in the large gum trees, even in those that overshadowed the home. When felling some of these trees by blasting, the birds left their old haunts and established themselves in an avenue of thick pines. Just at dusk they begin to call in a very harsh and loud croaking voice, then some take flight and wheel round the tops of the trees, alighting on the top of the highest, calling all the while to their friends; when half-a-dozen or so collect they flop away with a labouring heavy flight to the streams and water-holes in the district, and in the winter to the swamps. One of their principal foods is the freshwater crayfish or yabbies. At night they move quickly when foraging. Although I have never known them to breed at the Reedbeds, young are commonly observed."

Mr. Tom Carter records that this bird occurs fairly numerous in the mangroves on the Mid-west coast, sometimes passing the heat of the day in small flocks perched on the upper branches. One was shot many miles inland from Point Cloates, when perched in a clump of mallee. They breed in colonies in the clefts of rocky cliffs on islands near Fremantle, West Australia.

Mr. J. W. Mellor says they "stand during the day with their heads tucked back into the long feathers of the upper-back. They are nocturnal birds. They leave the Reedbeds about July and August to breed on the Murray cliffs and such-like haunts, returning about January."

Mr. Tom Tregellas sends me the following: "The bird enclosed is a young specimen, in the plumage of which they are frequently mistaken for the Southern Stone-Plover or land Curlew, the markings at this stage being very similar. They sometimes mate and nest whilst in this state, though as a rule they attain their full nankeen colour before mating. As a

THE BIRDS OF AUSTRALIA.

roosting-place they prefer close, heavy-foliaged trees, in which they stand and sleep by day, and emerge as the shades of evening fall, and sally forth in quest of food, which occupation lasts till morning, when they return to their solitudes. In the Melbourne Zoo an interesting sight may be witnessed every evening. As dusk draws out a great number of the Magpie Larks that have been out feeding all day return to the trees to roost, and at the same time the Night-Herons vacate their places in favour of the returning mudlarks. I think there are about 200 of the Night-Herons that roost in the Gardens, and as they know they will not be molested there, they are absolutely fearless of man."

"Near Idracowra an immature female was obtained. Although a nocturnal bird, it appears to be equally sharp-sighted in the bright sunlight, and flew off when I was fully forty yards away. Several afterwards seen could not be approached within shot. They take shelter during the day in the dense foliage of the trees on the margins of the rivers, and at night seek their food, which consists of insects, frogs, fish, etc."*

"From its habit of roosting all day in the thickest-foliaged tree it can find, the Night-Heron is seldom seen, and therefore naturally gets the credit of being more rare than it really is, but it is, nevertheless, a scarce bird about Richmond [North Queensland]. The few that I see do not appear to favour any particular season of the year, and the two or three that have come into my hands have all been birds in immature plumage.

"At the junction of the merrythought with the sternum on each hip, and again at the junction of the thighs (inside) with the body, there was a queer powder patch—a pale primrose-yellow, greasy, ropy-looking down, quite isolated and devoid of any powder. I have an idea that powder-down birds develop the patch, but do not develop the powder till they reach maturity."†

The bird figured and described is a male, collected in South Australia by Dr. J. B. Cleland, who very kindly presented it to me. It has the longest plumes of any bird in my collection.

In my *List of the Birds of Australia*, p. 83, 1913, just published, I have used for the Australian Night-Heron the name *Nycticorax caledonicus australasiæ*, based upon *Ardea australasiæ* Vieillot (*Tabl. Ency. Méth. Ornith.*, Vol. III., p. 1130, 1823). Re-reading the description there offered Vieillot is seen to describe a bird thus:—

"Le Bihoreau de la Nouvelle Hollande. *A. australasiæ*. *A. superciliis albis*; *genis, gulæ collique lateribus griseis*; *vertice nigro: occipite cristato*:

* Keartland, *Rep. Horn. Sci. Exp.*, Zool., p. 105, 1896.

† Berney, *Emu*, Vol. VI., p. 115, 1907.

NIGHT-HERON.

corpore subtus albo, supra cinereo ; rostro nigro ; pedibus virescentibus. On conserve au Muséum d'histoire naturelle plusieurs *Bihoreaux* de la Nouvelle Hollande."

I have italicised the words "corpore . . . supra cinereo" in the description, as these show that Vieillot did not have an Australian bird when he drew up his diagnosis, although he wrote the other sentence quoted.

As a synonym I also quoted "*Ardea novae-hollandiæ* (not Latham 1790) Vieillot, *Nouv. Dict. d'Hist. Nat.*, Vol. XIV., p. 436, 1817." This must also be eliminated from the synonymy, as the description there given is the same as that quoted above from the later work when Vieillot amended the specific name.

The other synonym, *Ardea maculata* Latham, is undoubtedly referable to this bird, being founded upon a Watling Drawing of a young bird from Port Jackson, but the name is pre-occupied by Boddaert 1783.

The only name available is the one I gave to the North-western bird on account of its paler coloration, but which in this work I am uniting to the Eastern form.

GENUS—BUTORIDES.

- BUTORIDES Blyth, Cat. Birds. Mus. As. Soc. Bengal,
p. 281, 1852 Type *B. javanica*.
Ocniscus Cabanis, Journ. für Ornith. 1856, p. 343 .. Type *B. javanica*.
Toburides Mathews, Austral Av. Rec., Vol. I., p. 195,
1913 Type *B. rogersi*.

SMALL Ardeine birds with long bills, long necks, long wings, short tail, short legs, and long toes.

The head is well crested, but there are no breast-plumes, and only a short dorsal ornamentation of lanceolate feathers in the breeding-season.

The bill is long and slender, longer than the tail or metatarsus, and more than one-third the length of the wing: it is typically ardeine in structure.

The wing has the second primary longest, though little exceeding the first, while the first and third are subequal.

The tail is short, consisting of twelve feathers, and is only about one-third the length of the wing.

The legs are short, and very little exposed tibia is present; the metatarsus is noticeably smaller than the culmen in length, and not much longer than the middle toe.

The metatarsus is reticulated throughout from its juvenile stage. The interwebbing of the toes is typically ardeine.

I have withdrawn the generic *Toburides* proposed for the species *B. rogersi*.

Key to the Species and Subspecies.

- A. Under-surface grey.
- a. Upper-surface greenish-grey *B. striata stagnatilis*, p. 466.
 - b. Upper-surface dark green *B. s. macrorhyncha*, p. 468.
- B. Under-surface more or less rufous.
- c. Upper-surface mostly dark green *B. s. littleri*, p. 470.
 - d. Upper-surface mostly rufous *B. rogersi*, p. 471.

BUTORIDES STRIATA STAGNATILIS.

LITTLE MANGROVE-BITTERN.

(PLATE 194.)

ARDETTA STAGNATILIS Gould, Proc. Zool. Soc. (Lond.) 1847, p. 221, 1848; Port Essington, Northern Territory.

Ardette stagnatilis Gould, Proc. Zool. Soc. (Lond.) 1847, p. 221, 1848; *id.*, Birds Austr., Vol. VI., p. 67, 1848.

Ardea stagnatilis Gray, Genera Birds, Vol. III., App., p. 25, 1849.

Butorides stagnatilis Bonaparte, Comptes Rendus Sci. (Paris), Vol. XL., p. 722, 1855; Sharpe, Cat. Birds Brit. Mus., Vol. XXVI., p. 183, 1898 (pars); Hall, Key Birds Austr., p. 99, 1899; Campbell, Nests and Eggs Austr. Birds, p. 963, 1901; Hall, Key Birds Austr., p. 99, 1906; Mathews, Handl. Birds Austral., p. 33, 1908; North, Austr. Mus. Sp. Cat., no. 1, Vol. IV., p. 37, 1913.

Butorides javanica (not Horsfield) Gould, Handb. Birds Austr., Vol. II., p. 317, 1865; Ramsay, Tab. List Austr. Birds, p. 21, 1888; North, Austr. Mus. Cat., no. 12, p. 322, 1890; Carter, Emu, Vol., III., p. 210, 1904.

Ardea striata subsp. *stagnatilis* Reichenow, Journ. für Ornith. 1877, p. 254.

Butorides javanica stagnatilis Hartert, Nov. Zool., Vol. XII., p. 204, 1905; Mathews, *ib.*, Vol. XVIII., p. 233, 1912.

Butorides rogersi (not 1911) Mathews, Austral Av. Rec., Vol. I., p. 55, 1912.

Butorides striata stagnatilis Mathews, List Birds Austr., p. 84, 1913; *id.*, Ibis 1914, p. 106.

DISTRIBUTION: Northern Territory; North and Mid-west Australia as far South as North West Cape and Sharks Bay.

Adult male. General colour above, including the back and wings, greenish-grey; the feathers of the wings margined with white, becoming buffy-white on the lesser wing-coverts; bastard-wing, primary-coverts and quills uniform blue-grey, the secondaries more or less edged with white at the tips; tail uniform blue-grey; ornamental feathers on the back greenish-grey; head and nuchal crest blue-black, as also a streak from the hinder gape over the ear-coverts; throat white; neck all round and hinder cheeks pale bluish-grey like the sides of the breast, becoming paler and inclining to white on the vent and under tail-coverts. Bill black, lower half of lower mandible yellow; iris yellow, bare space and lores greenish-yellow; tarsi and feet olive-yellow. Total length 500 mm.; culmen 71, wing 185, tail 60, tarsus 52.



J.G. Keulemans, del.

Witherby & C^o

$\frac{1}{2}$
BUTORIDES STAGNATILIS.
(LITTLE MANGROVE BITTERN)

LITTLE MANGROVE-BITTERN.

Adult female. Similar to the adult male but smaller. Bill: upper mandible and tomium of lower mandible black, remainder of lower mandible olive-grey; iris yellow, upper portion of lores yellow, remainder brown tinged with yellow; tarsi and feet olive-yellow.

Immature. Distinguished from the adult by the ochreous margins to the upper wing-coverts, the cheeks and sides of the upper-neck streaked with brown, and the feathers on the throat darker and inclining to blackish.

Nest. A strong platform built of stout twigs, with a slight depression in the centre. Dimensions outside $13\frac{1}{2}$ in. by 9 by 5 deep. Depth of depression 1 in.

Eggs. Clutch, two; uniform pale green; axis 40 mm., diameter 31.

Breeding-season. December; January; February.

MR. J. P. ROGERS, writing from North-west Australia, says: "A few of these birds frequent the patch of mangroves where I found the nest. When watching the nest to get the parents I was surprised to see the bird alight within ten yards of me. It climbed amongst the roots of the mangroves, going up and down the sloping roots easily, until it had examined me thoroughly, then went off to the nest, jumping from root to root, using its wings if the distance was rather far. On reaching the tree the nest was in, it climbed the roots, and from the topmost one, about six feet from the ground, it jumped into the lowest branch, and from there on up to the nest. All the time its tail was flicked in exactly the same manner as that of a *Porphyrio neomelanotus*. The full clutch was two eggs, and the nest was placed in a red mangrove tree, about twelve feet from the ground. The nest was placed on a horizontal three-pronged fork of a small tree growing on the outer edge of a patch of the largest mangroves I have ever seen, the trunks of which were ten or twelve inches through and about fifty feet high, the trunks being perfectly straight."

Mr. Tom Carter reports that "this bird occurs rather sparingly in mangroves, from the North West Cape to Sharks Bay. It is very shy and skulking in its habits. When suddenly disturbed it will adopt the rigid position of Bitterns, with body and neck elongated to the utmost capacity, and the bill pointed vertically up. When in this position it is easily overlooked. When forced to take wing it flies swiftly to another patch of mangroves, uttering a harsh and loud cry."

The bird figured and described is a male, collected at Point Torment, North-west Australia, on January 14th, 1911, by Mr. J. P. Rogers.

I have decided to adopt as the species-name, that given by Linné (*Syst. Nat.*, 10th ed., p. 144, 1758) to a South American bird, viz. *Ardea striata*. The Australian birds agree in general structure and coloration throughout with the American, passing through exactly the same plumage-changes.

BUTORIDES STRIATA MACRORHYNCHA.

LARGE-BILLED MANGROVE-BITTERN.

(PLATE 195.)

ARDETTA MACRORHYNCHA Gould, Proc. Zool. Soc. (Lond.) 1848, p. 39; Gosford, New South Wales.

Ardetta macrorhyncha Gould, Proc. Zool. Soc. (Lond.) 1848, p. 39; *id.*, Birds Austr., Vol. VI., p. 66, 1848.

Ardea macrorhyncha Gray, Genera Birds, Vol. III., App., p. 25, 1849.

Butorides macrorhyncha Bonaparte, Comptes Rendus Sci. (Paris), Vol. XL., p. 722, 1855; Gould, Handb. Birds Austr., Vol. II., p. 316, 1865; Ramsay, Proc. Linn. Soc. N.S.W., Vol. VII., p. 56, 1882; *id.*, Tab. List Austr. Birds, p. 21, 1888; North, Austr. Mus. Cat., no. 12, p. 322, 1890.

Ardea striata subsp. *macrorhyncha* Reichenow, Journ. für Ornith. 1877, p. 254.

Butorides javanica macrorhyncha Mathews, Nov. Zool., Vol. XVIII., p. 233, 1912.

Butorides striata macrorhyncha Mathews, List Birds Austr., p. 84, 1913.

DISTRIBUTION. New South Wales; South Queensland.

Adult male. Head and nuchal crest greenish-black; sides of face, hind-neck, sides of neck, and breast dusky-grey; back, wings, and tail very dark olive-green; wing-coverts edged with ochreous-buff; bastard-wing and primary-coverts dark brown tipped with white like the inner primary- and secondary-quills, the innermost secondaries like the back; tail uniform olive-green, paler on the outer feathers; middle of throat and entire fore-neck streaked with white and dark brown and showing green reflections; abdomen and sides of body grey, becoming dusky-brown on the lower flanks, vent, and under tail-coverts; thighs reddish-brown; axillaries and under wing-coverts pale grey, the outer marginal coverts white. "Bill: upper mandible dark reddish-brown, basal portion of the lower one oil-green; tibia and hinder part of the tarsus bright yellow, remainder of the legs and feet yellowish-brown" (J. Gould). Total length 485 mm.; culmen 69, wing 186, tail 64, tarsus 48.

Adult female. Similar to the adult male.

Immature. Differs from the adult by the rufous shaft-lines to the feathers of the crown and sides of the head; also by the bright ochreous centres to the feathers on the sides of the face and sides of the neck, as well as the pale wedge-shaped spots on the wing-coverts and scapulars, and the under-surface greyish-brown with broad white shaft-lines.

Nest. The usual loose structure of sticks.

Eggs. Clutch, two to four; uniform pale green; axis 43 mm., diameter 32.

Breeding-season. September to December.



J.G. Keulemans, del.

Witherby & Co

$\frac{1}{2}$
BUTORIDES MACRORHYNCHUS.
(THICK-BILLED MANGROVE BITTERN).

LARGE-BILLED MANGROVE-BITTERN.

"THE Thick-billed Mangrove Bittern (*Butorides macrorhynchus*) has not bred here [Upper Clarence River] at all this season, and I think the dry weather is the cause. I have only found one nest with four eggs, but last year I obtained them very plentifully. Since the late rains they seem to have come back again, for I saw a number yesterday. These birds often sit on a stump just above water, with their heads bent down, and one can see them make darts with their bills into the water. What they pick up I do not know, but it is apparently something that floats by.

"The nest is a concave platform of small sticks and twigs, about fourteen to fifteen inches in diameter, and is usually placed in the fork of a horizontal branch hanging over water; on one or two occasions I have found them several hundred yards from water. The eggs are three or four for a sitting, mostly the latter, pale blue. The nests are always placed singly, and I have never found it in colonies as described by Gould; it commences to construct its nest in September, and by the end of that month the eggs are usually laid, the breeding season continuing during October, November and December. It builds quickly, taking about a fortnight to construct its nest, and lay the full complement of eggs."*

The bird figured and described is a female, collected at Gosford, New South Wales, in December, 1894.

* Savidge, *Austr. Mus. Sp. Cat.*, no. 1, Vol. IV., p. 39, 1913.

BUTORIDES STRIATA LITTLERI.

NORTHERN MANGROVE-BITTERN.

BUTORIDES JAVANICA LITTLERI Mathews, Nov. Zool., Vol. XVIII., p. 233, 1912; Cooktown, North Queensland.

Butorides javanica littleri Mathews, Nov. Zool., Vol. XVIII., p. 233, 1912.

Butorides striata littleri Mathews, List Birds Austr., p. 84, 1913.

DISTRIBUTION. North Queensland.

Adult male. General colour above dark green, with coppery reflections on the upper-back in certain lights; wing-coverts margined with rufous; bastard-wing, primary-coverts and quills uniform dark green; some of the inner primaries and outer secondaries fringed with white at the tips, the innermost secondaries fringed with rufous on the outer webs; tail uniform dark green; crown of head, a streak at the back of the gape, and the nuchal crest greenish-black; hind-neck, fore-neck and entire under-surface of body ferruginous-brown; middle of throat and fore-neck white, with dark brown spots, and fringed with buff; axillaries and under wing-coverts grey, the marginal coverts white tinged with buff. Bill black, lower portion of under mandible yellow; bare skin round the eye green, iris yellow; tarsi brown in front, yellow at back. Total length, 440 mm.; culmen 70, wing 188, tail 70, tarsus 52.

Adult female. Similar to the adult male.

Young. Distinguished from the adult by the rufous shaft-lines on the head, and the triangular-shaped white marks on the scapulars and wing-coverts.

Immature (September). Is moulting into the adult-plumage, which is shown by the entire black head and nuchal feathers, and the feathers on the back.

Nest and Eggs. Undescribed.

“AMONGST the mangroves [Ripple Creek, Herbert River, North Queensland] I noticed a *Butorides javanica* flop like a Kingfisher from a bough into deep water, catch a fish, and return to its perch.”*

The type bird described above was collected at Cooktown, North Queensland, by Mr. E. Olive, and kindly presented to me by Mr. C. J. Robinson.

* Boyd, *Austr. Mus. Sp. Cat.*, no. 1, Vol. IV., p. 39, 1913.



J. G. Keulemans, del

Witherby & Co

$\frac{1}{2}$
BUTORIDES ROGERSI.
(RED MANGROVE BITTERN).

BUTORIDES ROGERSI.

RED MANGROVE-BITTERN.

(PLATE 196.)

BUTORIDES ROGERSI Mathews, Bull. Brit. Ornith. Club, Vol. XXVII., p. 101, 1911 ;
Onslow, Mid-west Australia.

Butorides rogersi Mathews, Bull. Brit. Ornith. Club, Vol. XXVII., p. 101, 1911 ; *id.*, Nov.
Zool., Vol. XVIII., p. 233, 1912 ; *id.*, List Birds Austr., p. 84, 1913.

Toburides rogersi Mathews, Austral Av. Rec., Vol. I., p. 195, 1913.

DISTRIBUTION. Onslow, Mid-west Australia.

Adult male. General colour, above and below, rufous with dark centres to the feathers of the back, scapulars, and wings ; bastard-wing, primary-coverts and quills dark brown, margined on the outer webs with rufous ; some of the inner primary-quills and outer secondaries have pale tips, the innermost secondaries fringed with rufous on the outer webs ; lower-back grey with rufous tips to the feathers ; tail uniform dark green ; crown of head and nuchal crest, as also a small line at the base of the gape, greenish-black ; under wing-coverts grey tinged with rufous ; the long under tail-coverts grey, subterminally dark brown and edged with rufous. Bill : upper mandible dark horn, lower yellowish-white ; iris yellow ; feet greenish-yellow. Total length 405 mm. ; culmen 66, wing 183, tail 58, tarsus 53.

Young. Bright rufous on the back and wings ; bastard-wing and primary-coverts rufous on the outer webs, pale brown on the inner ones and tipped with white like the greater wing-coverts, primary- and secondary-quills, and long scapulars ; tail dark brown fringed with rufous ; crown of head and nape rufous, the feathers fringed with black ; sides of face, sides of neck and lower fore-neck buff, with dark rufous inner webs ; middle of throat white, streaked with pale brown which becomes bright rufous on the lower fore-neck ; abdomen, under tail-coverts, axillaries, and under wing-coverts silky-white tinged with sandy-buff. Iris yellow ; feet yellow.

Immature. Head black, with rufous shaft-lines towards the tips of the feathers on the sides of the face ; sides of the neck and fore-neck more rufous, with little or no black on the feathers ; the under-surface similar, but not quite so rufous, and showing more of the grey bases to the feathers ; back, scapulars, and wing-coverts grey strongly margined with rufous, and spotted with white or rufous at the tips of the feathers ; bastard-wing, primary-coverts and quills nearly uniform pale brown with white tips ; tail dark brown faintly edged with rufous ; iris yellow ; feet greenish-yellow.

Nest and Eggs. Undescribed.

I CAN find no life-history of this bird. The type-bird figured and described is a male, collected at the mouth of the Ashburton River, as were the young and immature.

GENUS—I X O B R Y C H U S .

- IXOBRYCHUS Billberg, Synops. Faunæ Scand., Vol. I., p. 166,
 1828 (cf. Austral Av. Rec., Vol. II., p. 41, 1913) .. Type *I. minutus*.
Ardeola (not Boie 1822) Bonaparte, Ann. Lyc. Nat.
 Hist. New York, Vol. II., p. 307, 1826 Type *I. exilis*.
Ardetta Gray, App. List Genera Birds, p. 13, 1842 .. Type *I. minutus*.
Erodiscus Gloger, Hand. u. Hilfsb. Naturg., p. 410, 1842 .. Type *I. minutus*.

SMALLEST Ardeine birds with comparatively long bills, medium necks, long wings, short tail, and short legs with long toes.

The head is crested, but neither dorsal ornamental feathers nor breast-ornaments are developed.

The culmen is long, slender, and serrated on the edges of the mandibles, an indistinct notch being present; the culmen is longer than the tarsus and about one-third the length of the wing.

The wing is long, with the first primary longest.

The tail is short and even, and *composed of ten feathers*.

The legs are short with practically no exposed tibia present; the metatarsus is regularly scutellate in front and reticulate behind, and is shorter than the culmen and about equal to the tail. The toes are comparatively long with the interwebbing obsolete, and the middle toe is shorter than the metatarsus.

This generic form was first differentiated by Bonaparte who used for it the name *Ardeola*, but that name had been previously introduced by Boie for a species which is now considered generically distinct.

This error was corrected by Gray, in 1842, who substituted *Ardetta*, by which name the genus has been recently called. The same year, Gloger introduced *Erodiscus*, but fortunately there is no occasion to investigate the priority of these two names as in 1828 Billberg had used for the Bitterns the generic name *Ixobrychus*. In 1907 the type of this was named by Stone as *A. minuta* Linné, so that *Ixobrychus* was made available for this group.



H Grönvold. del

Witherby & Co

$\frac{3}{4}$
IXOBRYCHUS ALISTERI.
(*LITTLE BITTERN*).

IXOBRYCHUS MINUTUS DUBIUS.

LITTLE BITTERN.

(PLATE 197.)*

IXOBRYCHUS MINUTUS DUBIUS Mathews, Nov. Zool., Vol. XVIII., p. 234, 1912; Herdsman's Lake, South-west Australia.

Ardea pusilla (not Müller, 1776) Vieillot, Nouv. Dict. d'Hist. Nat., Vol. XIV., p. 432, 1817.

Ardetta pusilla Gould, Birds Austr., Vol. VI., pl. 68, 1848; *id.*, Handb. Birds Austr., Vol. II., p. 319, 1865; Ramsay, Proc. Zool. Soc. (Lond.) 1877, p. 343; North, Proc. Linn. Soc. N.S.W., Ser. II., Vol. X., p. 219, 1895; Sharpe, Cat. Birds Brit. Mus., Vol. XXVI., p. 234, 1898; North, Birds County Cumberl., p. 102, 1898; Hall, Key Birds Austr., p. 100, 1899; Campbell, Nests and Eggs Austr. Birds, p. 965, 1901; Hill, Emu, Vol. III., p. 229, 1904; Hall, Key Birds Austr., p. 100, 1906; Mathews, Handl. Birds Austral., p. 33, 1908; North, Austr. Mus. Sp. Cat., no. 1, Vol. IV., p. 40, 1913.

Ardeola pusilla Bonaparte, Comptes Rendus Sci. (Paris), Vol. XL., p. 722, 1855.

Botaurus minutus subsp. *pusillus* Reichenow, Journ. für Ornith. 1877, p. 243.

Ardetta minuta (not Linné) Ramsay, Proc. Linn. Soc. N.S.W., Vol. II., p. 199, 1878; *id.*, Tabl. List Austr. Birds, p. 21, 1888.

Ixobrychus minutus pusillus Mathews, Nov. Zool., Vol. XVIII., p. 234, 1912.

Ixobrychus minutus dubius Mathews, *ib.* (Herdsman's Lake, South-west Australia); *id.*, List Birds Austr., p. 85, 1913.

Ixobrychus minutus alisteri Mathews, Austral Av. Rec., Vol. I., p. 188, 1913 (New South Wales).

DISTRIBUTION. Northern Territory; Queensland; New South Wales; Victoria; South-west Australia.

Adult male. Crown of head and nuchal crest sooty-black, like the back, scapulars, upper tail-coverts and tail, with a certain amount of gloss; sides of face and entire hind-neck rich chestnut, as also some of the outer lesser upper wing-coverts and the greater coverts; remainder of the upper wing-coverts buff; bastard-wing, primary-coverts and quills blackish-brown, with rufous tips to some of the feathers, the outer web of the first primary paler and narrower than the others; sides of chin and throat white; fore-neck and breast buff, which becomes paler on the sides of the body, flanks, and thighs; an irregular

* The Plate is lettered *Ixobrychus alisteri*.

THE BIRDS OF AUSTRALIA.

line from the middle of the chin, throat, and fore-neck composed of dark edged feathers on the chin and throat, while those on the fore-neck are dull chestnut, a dark patch on each side of the breast where the feathers are margined with buff; the elongated plumes on the lower-breast and sides of the body have dark longitudinal shaft-streaks; abdomen and under tail-coverts silky-white, like the axillaries and under wing-coverts, the latter washed with buff; under-surface of quills slaty-grey. Bill yellow, culmen black; eyes bright yellow, legs and feet yellow. Total length, 310 mm.; culmen 44, wing 130, tail 43, tarsus 42.

Adult female. Similar to the adult male.

Immature. Crown of head black, the feathers on the fore-head dark brown; sides of the crown, as also the nape, rich chestnut, ear-coverts inclining to sandy-buff; middle of throat and fore-neck white, streaked with black and washed with buff, becoming darker and inclining to chestnut on the neck-frill; back and scapulars blackish with buff margins, the edges paler and wider on the wing-coverts, marginal wing-coverts chestnut; bastard-wing, primary-coverts and quills black, margined and tipped with chestnut; a black patch on the breast and the feathers margined with ochreous-buff; axillaries white, like the under wing-coverts, the upper ones washed with buff.

Younger ones than the above, with down still adhering to the feathers of the head, are almost similar, but everywhere darker.

Nest. "An open structure, composed of dead leaves of aquatic plants, and grasses and herbage growing about the swamp, and fastened to several reeds just above the surface of the water" (Evered).

Eggs. "Clutch four, oval in form and pure white, the texture of the shell being very fine and the surface dull and lustreless. Axis, 29-32 mm.; diameter, 24-25.5." (North.)

Breeding-season. November (Evered, New South Wales); November (Hill, Guildford, West Australia).

"I AM happy to report that this beautiful little species is still plentiful in the neighbourhood of Cleveland Bay and also in the Herbert-river district [North Queensland]; from both places I have received specimens . . . I observed no difference in plumage or size in the northern Queensland specimens and those shot near Sydney."*

"28/11/03.—Nest with three fresh eggs in rushes on river; nest consisted merely of a handful of fragments of rushes, and fell to pieces on being removed . . . 30/11/03.—Flushed bird at same place; discovered another egg on ground close by where the nest had been."†

"It frequents the reeds, rushes and other aquatic herbage found about swamps, reed-beds, dams, and lagoons, also the dense thickets and rank grass beds fringing the sides of rivers and creeks. It is shy and seclusive in habits, and trusts to crouching down to conceal itself if observed rather than to seek refuge in flight, generally being met with singly, and less frequently in pairs. It is difficult to flush, so much so that it is often caught by dogs or

* Ramsay, *Proc. Zool. Soc.* (Lond.) 1877, p. 343.

† Hill, *Emu*, Vol. III., p. 229, 1904.

LITTLE BITTERN.

by hand, but when disturbed it can fly very well, although with slow and laboured flight. Its food consists principally of small fish and aquatic insects.”*

Mr. North further records this species from the Northern Territory and also from as far inland, in New South Wales, as Narromine on the banks of the Macquarie River, and about three hundred and ten miles west of Sydney.

Kearland records it from Gippsland, in Victoria: “Sometimes it will straighten itself up like a stick, at other times it will crouch and puff its feathers out until it resembles a ball.”†

The bird figured and described is an adult, collected at Long Bay, Sydney, New South Wales, on July 15th, 1908, and is the type of *Ixobrychus minutus alisteri* mihi. For the time being I am uniting the birds from South-west Australia with those from Eastern Australia; but I cannot find any record of this bird from South Australia.

* North, *Austr. Mus. Sp. Cat.*, no. 1., Vol. IV., p. 41, 1913.

† Kearland, *ib.*, p. 42.

GENUS—DUPETOR.

DUPETOR Heine, Nomencl. Mus. Hein., p. 308, 1890 .. Type *D. flavicollis*.
Xanthocnus Sharpe, Bull. Brit. Ornith. Club, Vol. III.,
 p. xxxvii., 1894 Type *D. flavicollis*.

SMALL Ardeine birds with very long bills, comparatively short necks, long wings, medium tail, short legs, and long toes.

The head is scarcely crested, while there is a tendency to dorsal ornamentation, and the breast-feathers are soft and full.

The culmen is very long, and the edges of the mandibles are strongly serrated for about half the length from the tip, while the anterior notch is obsolete; the culmen exceeds the metatarsus in length and is more than one-third the length of the wing.

The wing has the third primary longest, but little exceeding the second, while the first and fourth are little shorter and subequal.

The tail is even, composed of ten feathers, and about equal to the culmen and longer than the metatarsus.

The legs are short, but the tibia is noticeably exposed, though for a very short space; the metatarsus is regularly scutellate in front and reticulate behind, and is shorter than the culmen. The toes are long, and the middle toe, without the claw, is almost equal to the metatarsus in length. The interwebbing is obsolete, as in the preceding genus.

In 1894 Sharpe separated this genus under the name *Xanthocnus*, but later recognised that it had previously been named *Dupetor*.

I, at one time, considered that by lumping many species into one genus, ease of working in ornithological science might be attained irrespective of the incongruity of the elements of such groups. I therefore advocated the use of *Ardeiralla* for the present genus, uniting the Asiatic and Australian species now called *Dupetor* with the African species, the type of *Ardeiralla*.

I also pointed out that *Dupetor* was really proposed as a substitute for *Ardeiralla*, and therefore unavailable for the species grouped by Sharpe under *Xanthocnus*.

I now withdraw that conclusion, as, though *Dupetor* is given as substitute for *Ardeiralla*, the only species included under the genus-name

DUPETOR.

Dupetor is the Asiatic species *flavicollis*, while the species *sturmi*, the monotype of *Ardeiralla*, is also noted under another genus-name. I am therefore making use of *Dupetor* for the species catalogued under that generic name in the *Catalogue* of the Birds in the British Museum, Vol. XXVI., and would point out that *Ardeiralla* is easily separated by means of its very short bill, in addition to other characters. The bill in *Ardeiralla* is exceeded by the metatarsus in length, while in *Dupetor* the bill is considerably longer than the metatarsus.

Key to the Subspecies.

- A.* Fore-neck rufous-brown and white ; bare space round
the eye yellow *D. f. gouldi*, p. 479.
- B.* Fore-neck bluish-black and buffy-white ; bare space
round the eye light brown *D. f. olivei*, p. 482.



J.G. Keulemans, del.

Witherby & Co

$\frac{2}{5}$

ARDEIRALLA GOULDI.
(YELLOW-NECKED BITTERN).

DUPETOR FLAVICOLLIS GOULDI.

YELLOW-NECKED MANGROVE-BITTERN.

(PLATE 198.)*

ARDETTA GOULDI Bonaparte, Consp. Gen. Av., Vol. II., p. 132, 1855; New South Wales.

Ardetta flavicollis (not Latham) Gould, Birds Austr., Vol. VI., pl. 65, 1848; Diggles, Handb. Birds Austr., Vol. II., pl. 106, 1877.

Botaurus flavicollis Sturt, Narr. Exp. Centr. Austr., Vol. II., App., p. 52, 1849.

Ardetta gouldi Bonaparte, Consp. Gen. Av., Vol. II., p. 132, 1855.

Ardea flavicollis australis Schlegel, Mus. Pays-Bas, Vol. V., Ardeæ, p. 46, 1863.

Butoroides flavicollis Gould, Handb. Birds Austr., Vol. II., p. 315, 1865; Ramsay, Proc. Linn. Soc. N.S.W., Vol. VII., p. 55, 1882; *id.*, Tab. List Austr. Birds, p. 21, 1888; North, Austr. Mus. Cat., no. 12, p. 321, 1890.

Xanthocnus gouldi Sharpe, Bull. Brit. Ornith. Club., Vol. III., p. xxxvii., 1894.

Dupetor gouldi id., ib., Vol. V., p. xiii., 1895; *id.*, Cat. Birds Brit. Mus., Vol. XXVI., p. 249, 1898; Campbell, Nests and Eggs Austr. Birds, p. 966, 1901; Hall, Key Birds Austr., p. 100, 1906; Mathews, Handl. Birds Austral., p. 33, 1908; Ogilvie-Grant, Ibis 1910, p. 175; North, Austr. Mus. Sp. Cat., no. 1, Vol. IV., p. 42, 1913.

Ardeiralla flavicollis gouldi Mathews, Nov. Zool., Vol. XVIII., p. 234, 1912.

Dupetor flavicollis gouldi Mathews, List Birds Austr., p. 85, 1913.

DISTRIBUTION. South Queensland; New South Wales; Victoria; South Australia; South-west Australia.

Adult male. General colour above blackish-brown, including the back and wings; quills and tail-feathers slate-black; crown of head black, tinged on the sides of the neck with brown; throat white, with a central line of buff feathers tipped with black; cheeks black, tinged with rufous; fore-part of ear-coverts white, sides of neck ochraceous-buff; feathers on the fore-neck rufous, black, and white, those on the lower fore-neck rufous-brown with white margins; under-surface of the body slate-grey, with a tinge of rufous; axillaries and under wing-coverts dark slate-grey. Bill: upper mandible brown, lower mandible yellow; iris brownish-yellow, bare skin round the eye yellow; feet brown. Total length 540 mm.; culmen 75, wing 217, tail 83, tarsus, 64.

* The Plate is lettered *Ardeiralla gouldi*.

THE BIRDS OF AUSTRALIA.

Adult female. Similar to the adult male.

Immature. General colour above rufous-brown, darker and inclining to slate-black on the top of the head; sides of head blackish with narrow rufous margins to the feathers; bastard-wing and primary-coverts uniform slate-grey with white tips; quills similar to the adult, but paler; fore-neck also paler rufous; abdomen and thighs much more rufous; under wing-coverts grey, edged with rufous; axillaries uniform grey.

Nest. A platform of sticks placed on a limb usually overhanging water.

Eggs. Clutch, three to five; white, with a greenish tinge inside; axis 44-46, diameter 34-35.

Breeding-season. January (Gould); October to January (Elvery); September (Savidge).

MR. TOM CARTER sent a skin of this bird, saying: "Not uncommon in the swamps and rivers in South-west Australia."

Mr. J. W. Mellor reports: "On the Clarence, Tweed and Richmond Rivers of Northern New South Wales it is frequently met with, especially where the tide influences the water, as it delights to wade in the slimy mud in search for small crabs, etc., left exposed by the falling tide. It does not take to wing easily, but when it does it only flies a short distance and then alights again."

"This bird was very numerous at the Dépôt Creek, remaining during the day in the trees in the glen . . . It was the habit of these birds to fly from the glen across the plains to this lower water [about thirty miles away] where they remained until dawn, when they announced their return to us by a croaking note as they approached the trees. They collected in the glen about the end of April and left us."*

"The Yellow-necked Bittern is exclusively an inhabitant of the mangroves from which it is not easily driven, for it readily eludes pursuit by the facility with which it runs over the mud beneath their roots for a long time and distance, and it must be very closely followed up before it can be forced to take wing."†

"Was not uncommon in the South-west [of Australia], being met with singly or in pairs. It roosted by day in the trees overhanging the water."‡

"Like some of the other members of its tribe, this Bittern resorts to the same nest to lay again if previously robbed."§

"Mangrove flats, the timbered margins of rivers and creeks and tree-lined lakes, swamps, and pools are its favourite haunts, situations that are favourable for it to procure small fish and insects, on which it subsists, the food varying according to the situations it frequents."¶

* Sturt, *Narr. Exp. Centr. Austr.*, App., p. 52, 1849.

† Gould, *Handb. Birds Austr.*, Vol. II., p. 315, 1865.

‡ Shortridge, *Ibis* 1910, p. 175.

§ Campbell, *Nests and Eggs Austr. Birds*, p. 966, 1901.

¶ North, *Austr. Mus. Sp. Cat.*, no. 1, Vol. IV., p. 43, 1913.

YELLOW-NECKED MANGROVE-BITTERN.

"The nesting site is invariably in the vicinity of water, the nests and eggs being usually placed on a horizontal limb overhanging a running stream."*

"This bird disperses itself over a far wider range of country and seems to have more of a nocturnal habit than *Butorides stagnatilis*. It is not unusual to flush it from amongst reeds by the side of water-holes or swamps. A nest I saw the birds commencing to build contained the full complement of four eggs within ten days. It was a very wet, dark afternoon when I found it, and both birds were carrying sticks as fast as they could, one after another. Upon my approach some days after, the bird which was sitting on the eggs hopped away from the nest and assumed a straight, horizontal position: it straightened itself out full length, as straight as any walking-stick, with its bill pointing straight up and its feathers pressed in close to the sides of its body. I knew the bird was there, for I had not taken my eyes from the spot; even then I was some seconds before I located it . . . As soon as these birds are robbed they start to build again . . . They are fond of building in a willow-tree hanging over the water. During the dry season of September, October and November, 1895, a large number disappeared at breeding-time, but came back again after the end of the year . . . After being robbed a time or two, they build further back from the water, which makes it harder to find them . . . On 2nd March, 1895, I found a nest . . . containing three half-grown young ones."†

The bird figured and described is a male, collected on the Richmond River in November, 1888.

* Elvery, *Austr. Mus. Sp. Cat.*, no. 1, Vol. IV., p. 43, 1913.

† Savidge, *ib.*, p. 44,

DUPETOR FLAVICOLLIS OLIVEI.

NORTHERN YELLOW-NECKED MANGROVE-BITTERN.

ARDEIRALLA FLAVICOLLIS OLIVEI Mathews, Nov. Zool., Vol. XVIII., p. 234, 1912;
Johnston River, North Queensland.

Butoroides flavicollis Ramsay, Proc. Zool. Soc. (Lond.) 1877, p. 343.

Dupetor gouldi Le Souëf, Emu, Vol. II., p. 158, 1903.

Dupetor flavicollis gouldi Hartert, Nov. Zool., Vol. XII., p. 204, 1905; Hall, Emu,
Vol. VII., p. 26, 1907; Mathews, *ib.*, Vol. IX., p. 4, 1909; *id.*, *ib.*, p. 56; *id.*, *ib.*,
Vol. X., p. 106, 1910.

Ardeiralla flavicollis olivei Mathews, Nov. Zool., Vol. XVIII., p. 234, 1912 (Johnston
River, North Queensland); *id.*, Austral Av. Rec., Vol. I., p. 56, 1912.

Ardeiralla flavicollis disneyi Mathews, Nov. Zool., Vol. XVIII., p. 234, 1912 (Parry's
Creek, North-west Australia).

Ardeiralla flavicollis melvillensis Mathews, Austral Av. Rec., Vol. I., p. 74, 1912 (Melville
Island).

Dupetor flavicollis olivei Mathews, List Birds Austr., p. 86, 1913; *id.*, Ibis 1914, p. 106.

DISTRIBUTION. North Queensland; Northern Territory; North-west Australia.

Adult male. General colour above slate-black, with a metallic sheen, including the head, back, wings, and tail; the scapulars more inclining to brown and the quills to slate-colour; outer edge of wing white, tinged with buff; throat white, with a line of rufous feathers tipped with slate-grey running down the middle, and this line becoming black on the fore-neck, increasing in size and the feathers margined with white on the lower fore-neck and upper-breast; sides of the neck orange-buff; cheeks mixed with rufous or buff, with a buff spot at the back of the gape; abdomen dull slate-colour, more or less mixed with buffy-white. Bill: culmen black, remainder of upper mandible brown, lower mandible and lores light brown; iris reddish-brown; tarsi and feet brown. Total length, 540 mm.; culmen 79, wing 217, tail 77, tarsus 69.

Adult female. Similar to the adult male. These birds are darker than the southern ones.

Young. Differs from the adult in having the feathers of the back and wings fringed with ochraceous-buff, as also the feathers on the sides of the face and hind-neck; the feathers on the fore-neck ochraceous-brown instead of black, the sides of the neck buff, and the abdomen paler slate-grey, with ochreous or buff margins to the feathers.

NORTHERN YELLOW-NECKED MANGROVE-BITTERN.

Immature female. Differs from the adult in being rufous-brown above, including the wings and back; head, hind-neck, and sides of neck washed with rufous, the fore-neck and abdomen also rufous.

Nest. A platform of fine paper-bark twigs, with the centre covered with finer ones in which there is a depression. The dimensions are 14 in. by 10, and almost six deep.

Eggs. Clutch, two to three; white, with a greenish tinge inside; axis 45 mm., diameter 35 (Queensland), 40-43 by 34 (Melville Island).

Breeding-season. November; December; January (Melville Island).

MR. J. P. ROGERS found these birds in the North-west of Australia and on Melville Island, Northern Territory, and he sent the nests and eggs from the latter locality. He says: "Clutch two, were nearly hatched when discovered in December, 1911. The nest was built on a paperbark tree that had fallen into the creek, and which was still growing. The nest was placed on a stout three-pronged fork at a height of about two feet from the water, and was partly hidden by leafy branches." Again, on 1st January, 1912: "Clutch three; the nest was built in a paperbark tree overhanging the water; it was placed on a stout fork and was a platform of paperbark twigs covered with a very fine layer of the same material, the whole nest was covered, not merely the centre, as the nest described above, the depression being very slight. Dimensions fifteen inches by twelve, by seven deep in the centre. This was much more bulky than any others seen. Again, on 7th January, 1912: "This species was fairly numerous at the great swamp on the north side of the island. Although common, they were wild, and those shot could not always be obtained owing to the dense growth of sword-grass, etc."

For the time being I am considering the birds from North Queensland to the North-west of Australia as similar.

The male bird described is the type of "*disneyi*"; it was collected on Parry's Creek, North-west Australia, on November 17th, 1908, by Mr. J. P. Rogers.

GENUS—BOTAURUS.

BOTAURUS Stephens, in Shaw's Gen. Zool., Vol. XI.,
pt. II., p. 592, 1819 Type *B. stellaris*.
Butor Swainson, Classif. Birds, Vol. II., p. 354, 1837 Type *B. stellaris*.

ARDEINE birds with long stout bill, medium neck, long wings, short tail, medium legs with very long toes.

The species of the present genus stand apart from all other Ardeine birds in their style of coloration, soft plumage, and very long toes with very long claws.

The bill is typically ardeine, comparatively rather short and stout, the edges of the mandibles strongly serrated with anterior notch present. The culmen is much shorter than the metatarsus. The wing is long, with the second and third primaries subequal and longest, the first and fourth little shorter and subequal. The secondaries are elongated and almost equal the primaries in length.

The tail is composed of ten feathers, soft and even, and about one-third the length of the wing. The legs are comparatively short, and the tibia but slightly exposed: the metatarsus is regularly scutellate in front and a little less than one-third the length of the wing. The toes are very long: the middle toe about equal to the metatarsus; the inner toe is distinctly longer than the outer. The claws are very long.

Two pairs of powder-down patches are present.

Key to the Subspecies.

- | | | | | | |
|-----------------------|----|----|----|----|--------------------------------------|
| A. Lighter and larger | .. | .. | .. | .. | <i>B. p. poiciloptilus</i> , p. 486. |
| B. Darker and smaller | .. | .. | .. | .. | <i>B. p. westralensis</i> , p. 489. |

BOTAURUS POICILOPTILUS POICILOPTILUS.

EAST AUSTRALIAN BITTERN.

ARDEA POICILOPTILA Wagler, Syst. Av., Ardea, p. 185, sp. 28 (note), 1827; New South Wales.

Ardea poiciloptila Wagler, Syst. Av., Ardea, p. 185, sp. 28 (note), 1827.

Ardea perciloptera Gray, in Griffith's ed. Cuvier's Anim. Kingd., Vol. VIII., p. 343, 1829 (error for *poiciloptilus* Wagler).

Botaurus poiciloptilus id., Genera Birds, Vol. III., p. 557, 1847; Gould, Handb. Birds Austr., Vol. II., p. 313, 1865.

Botaurus australis id., Birds Austr., Vol. VI., pl. 64, 1848; Sturt, Narr. Exp. Centr. Austr., Vol. II., App., p. 52, 1849; Ramsay, Proc. Linn. Soc. N.S.W., Vol. VII., p. 55, 1882.

Botaurus poeciloptila Bonaparte, Comptes Rendus Sci. (Paris), Vol. XLI., p. 723, 1855.

Botaurus poeciloptilus id., Consp. Gen. Av., Vol. II., p. 135, 1855; Sharpe, Cat. Birds Brit. Mus., Vol. XXVI., p. 258, 1898; Campbell, Nests and Eggs Austr. Birds, p. 967, 1901; Sharpe, Hist. Coll. Brit. Mus., p. 146, 1906; Hall, Key Birds Austr., p. 100, 1906; Mathews, Handl. Birds Austral., p. 33, 1908; Littler, Handb. Birds Tasm., p. 195, 1910; North, Austr. Mus. Sp. Cat., no. 1, Vol. IV., p. 45, 1913.

Botaurus poecilopterus Ramsay, Tab. List Austr. Birds, p. 21, 1888; North, Austr. Mus. Cat., no. 12, p. 320, 1890; Fletcher, Emu, Vol. IX., p. 79, 1909.

Botaurus poiciloptilus poiciloptilus Mathews, Nov. Zool., Vol. XVIII., p. 235, 1912; *id.*, List Birds Austr., p. 86, 1913.

DISTRIBUTION. Queensland; New South Wales; Victoria; Tasmania; South Australia.

Adult male. Head uniform dusky-brown glossed with purple and with slightly paler tips to some of the feathers; sides of neck and sides of throat similar but a little paler; ear-coverts and a line over the eye buffy-white; middle of back and scapulars dark brown vermiculated and mottled with buff or buffy-white and a certain amount of purple reflection; wing-coverts mottled with brown, rufous, and buff—more uniform brown on the bend of the wing, bastard-wing, and primary-coverts; primary- and secondary-quills pale earth-brown, irregularly barred and mottled with sandy-rufous; tail-feathers dark brown with sandy-rufous mottlings on the outer webs; lower-back, rump, and upper tail-coverts mottled with sandy-buff; throat and under-parts sandy-buff irregularly marked and mottled with pale brown, more inclining to rufous on the under wing-coverts; axillaries buff, barred with pale brown. Irides bright yellow; feet light greenish;

EAST AUSTRALIAN BITTERN.

soles yellow; bill: lower mandible yellowish-green, upper dark brown; face yellowish-green. Total length 700 mm.; culmen 69, wing 339, tail 150, tarsus 102.

Adult female. Similar to the adult male, but more tawny-buff on the sides of the face, fore-neck, and under-parts. Total length 650 mm.; culmen 69, wing 325, tail 115, tarsus 102.

Immature. Head darker and more inclining to black, the feathers of back darker with wider sandy-buff margins, the markings on the quills brighter, the colours of the under-parts richer, and the axillaries not quite so distinctly barred.

Nest. Built among reeds and composed of aquatic herbage, and measures about twelve inches across.

Eggs. Clutch, from four to five; uniform dull greenish-brown; axis 50-53 mm., diameter 35-39.5.

Breeding-season. August to October (White, South Australia); November to January (Campbell).

CAPTAIN S. A. WHITE says: "These birds were to be met with in almost every reedy swamp in this state at one time, and were quite numerous within five miles of Adelaide in the swamps and on the reedy banks of the River Torrens not so many years ago, but the advance of civilization has driven them to more remote parts. The deep booming note of this bird can be heard at a great distance; it is a most wonderful call for a bird to make. I am sure that this weird booming noise plays a very important part in connection with the fabulous animal of the aborigines, for the Bittern haunts the dark deep holes of the swamps overhung by thick flags and reeds, and it is in such localities that the natives tell you that the 'Bunyip' is to be found. This bird lives on frogs, tadpoles, fish, mice, etc. I often saw them sitting on the bare muddy banks of a swamp quite motionless with their bills turned up to the sky, when I have mistaken them for a stump or piece of driftwood. They nest in the thick flags, and the nest is composed of bent flags and reeds just above the water, and generally contains four or five eggs of a dark olive brown. Nesting time in South Australia, August to October.

"Now they are not plentiful and are seen sometimes in the early mornings and late evenings, in the clump of reeds. They do not seem to call during February and March. The eggs resemble the dry flags very much. They boom day and night."

Mr. Edwin Ashby says it is common on the rushy margins of billabongs on the Murray River, in South Australia, where it is locally known as the "Murray Bull," owing to its booming note resembling the call of that beast.

Mr. J. W. Mellor reports: "When standing motionless, with its neck stuck straight up and the bill pointing into the air, it lets forth its doleful 'boom.' It makes its nest among the rushes and reeds; these

THE BIRDS OF AUSTRALIA.

are merely bent and trodden into a small platform, and the leaves of the reeds used as lining. The clutch is three or four, of a uniform dull slate colour."

"The Bitterns when disturbed would stand in their characteristic attitude for a while, and then rise and wing their way to another corner of the lagoon. On the 9th of October last year [1908, in Tasmania] they commenced their 'booming' calls, and these were continued up to the second week in December. I remember early one morning flushing six Bitterns from their breakfast of water-reeds. They were all, as far as could be seen, adult birds, and made an impressive picture as they flew away."*

The male bird described was collected at Botany Bay, New South Wales, in July, 1899; the female at Randwick, in April, 1900.

* Fletcher, *Emu*, Vol. IX., p. 79, 1909.



J.G. Keulemans, del.

Witherby & Co.

$\frac{1}{3}$
BOTAURUS WESTRALENSIS.
(WESTERN BITTERN).

Order ARDEIFORMES

No. 251.

Family ARDEIDÆ.

BOTAURUS POICILOPTILUS WESTRALENSIS.

WEST AUSTRALIAN BITTERN.

(PLATE 199.)

BOTAURUS POICILOPTILUS WESTRALENSIS Mathews, Nov. Zool., Vol. XVIII., p. 235, 1912; Sharks Bay, West Australia.

Botaurus poeciloptilus (not Wagler) Ogilvie-Grant, Ibis 1910, p. 175.

Botaurus poeciloptilus westralensis Mathews, Nov. Zool., Vol. XVIII., p. 235, 1912; *id.*, List Birds Austr., p. 86, 1913.

DISTRIBUTION. West Australia.

Adult male. Differs from *Botaurus poeciloptilus poeciloptilus* in being much darker above and smaller. Irides clear buff-brown, with a narrow outer circle of reddish-brown; feet pale sea-green; bill, dull buff, tinged with greenish at the sides, dirty-slate above. Culmen 67 mm., wing 310 mm.

Nest and Eggs. Undescribed.

MR. TOM CARTER says these are more plentiful than *Dupetor gouldi*, but are decreasing in numbers owing to settlement, drainage, etc.

The type male figured and described was collected at Sharks Bay, Mid-west Australia, in December, 1880.

INDEX.

NOTE.—The ciphers in **THICK TYPE** refer to the page where the genus or species is systematically treated. These are placed first.

- Acrolia*, 264.
Actidromas, 245.
Actidurus, 233.
Actinodromus, 245.
Actites, 184, 214.
—— *brevipes*, 207.
—— *hypoleucos*, 201.
—— *incana*, 207.
—— *ochropus*, 203.
—— *pulverulentus*, 207.
Actitis, 214.
—— *bartrami*, 234.
—— *bartramius*, 234.
—— *empusa*, 216, 219.
—— *glareola*, 230.
—— *hypoleucos*, 212, 214, 215, 216, 219, 259.
—— *aurita*, 216.
—— *pulverulentus*, 211.
Actiturus, 233.
—— *australis*, 255.
—— *bartrami*, 234.
—— *bartramius*, 234.
—— *longicaudatus*, 235.
—— *longicaudus*, 234.
Actitus, 214.
—— *incanus*, 211.
Actodroma, 245.
Actodromas, 165, 245, 246.
—— *acuminata*, 255, 258, 261.
—— *damacensis*, 251.
—— *maculata*, 258, 261.
Actodromus, 245.
—— *albescens*, 247.
—— *australis*, 247.
—— *ruficollis*, 247.
—— *salina*, 251.
—— *subminuta*, 251.
acuminata, *Actodromas*, 255, 258, 261.
——, *Erolia*, 255.
——, — *maculata*, 263.
——, *Heteropygia*, 218, 246, 256, 258, 259.
——, *Pelidna*, 255.
——, *Pisobia*, 246.
——, — *maculata*, 256, 259.
——, *Tringa*, 255, 258, 259, 260.
acuminatus, *Limnocinclus*, 255, 181, 254, 260, 262.
——, *Totanus*, 255.
- Ægialeus*, 109, 111, 123, 124, 125.
Ægialites, 123.
Ægialitis, 67, 81, 98, 107, 108, 111, 114, 123, 124, 130, 257, 265.
—— *bicinctus*, 86, 93.
—— *cantianus*, 110.
—— *canus*, 117, 120.
—— *cucullatus*, 109, 125, 128, 131, 133.
—— *dubia*, 68, 109.
—— *falklandica*, 115.
—— *geoffroyi*, 99, 143.
—— *gigas*, 99.
—— *hiaticula*, 68, 93, 94, 96, 110, 123.
—— *inornatus*, 92.
—— *leschenaultii*, 100.
—— *macrorhynchus*, 99.
—— *masteri*, 93, 96.
—— *melanops*, 109, 125, 137, 141.
—— *melodus*, 109.
—— *monachus*, 128.
—— *mongola*, 68.
—— *mongolicus*, 92.
—— *mongolus*, 81, 82, 92, 93.
—— *nigrifrons*, 137.
—— *nivosa*, 68.
—— *pallida*, 115.
—— *pecuaria*, 115.
—— *peroni*, 115.
—— *placida*, 114.
—— *ruficapillus*, 93, 110, 117, 121, 249.
—— *sanctæhelenæ*, 115.
—— *semipalmata*, 68, 95.
—— *veredus*, 104.
Ægialophilus, 108, 109, 112, 113.
—— *frontalis*, 114, 115, 125.
—— *ruficapillus*, 117.
Ægialus, 123.
ægocephala, *Limosa*, 187.
æquatorialis, *Gallinago*, 294.
——, *Scolopax*, 283.
Ærolia, 264.
æthiopicus, *Ibis*, 379.
——, *Threskiornis*, 378, 379.
affinis, *Rhyacophilus*, 230.
——, — *glareola*, 230, 205.
——, *Totanus*, 230.
Afribyx, 41.
—— *lateralis*, 41.

THE BIRDS OF AUSTRALIA.

- africana*, Parra, 314.
africanus, *Hæmatopus niger*, 26, 27.
Afroxyechus, 124, 125.
 tricollaris, 126.
Agamia picata, 446.
Ajaja, 398, 399.
alba, *Herodias*, 415, 431, 434.
 Trynga, 243.
albescens, *Actodromas*, 247.
 Calidris, 247.
 Schæniclus, 247.
 Tringa, 247.
albus, *Hypsibates leucocephalus*, 150.
alexandræ, *Notophox pacifica*, 442.
alexandrina, *Charadrius*, 111, 113.
alexandrinus, *Charadrius*, 68, 111, 112.
 Leucopoliis, 108, 115, 125.
 alexandrinus, 114.
alisteri, *Ixobrychus*, 473.
 minutus, 473, 475.
alligator, *Ibis molucca*, 380, 383.
alpina, *Tringa*, 274.
americana, *Recurvirostra*, 161, 162.
americanus, *Hæmatopus niger*, 26.
 Numenius, 168.
Anarhynchus, 108, 109.
 frontalis, 114, 115, 125.
Ancylocheilus, 264.
Ancylochilus, 264.
 subarquatus, 266.
andina, *Recurvirostra*, 162.
antarctica, *Grus*, 373, 375.
Anteliotringa, 274.
 tenuirostris, 275, 276.
Antigona, 371.
Antigone, 371, 372.
 australasiana, 373, 374, 376.
 collaris, 371.
 rubicunda, 373.
 torquata, 371.
antigone, *Ardea*, 373.
Antigonia, 371.
Antigonus, 371.
Aphriza, 4.
apricarius, *Charadrius*, 68, 75, 111.
 Pluvialis, 70, 73, 79, 125.
arabs, *Choriotis*, 362.
Ardea, 412, 418, 422, 426.
 antigone, 373.
 aruensis, 436, 447.
 australasiæ, 462.
 bullaragang, 442.
 bullaranjaus, 442.
 cinerea, 412, 414, 417.
 rectirostris, 414.
 flavicollis australis, 479.
 garzetta, 425.
 immaculata, 424.
 intermedia, 429.
 jugularis, 455.
 leucophæa, 414, 417.
 leucops, 438.
 macrorhyncha, 468.
 maculata, 459, 463.
 mathewsæ, 419.
 matook, 454, 455.
 melanopus, 424.
 novæ-guinææ, 454.
 novæ-hollandiæ, 396, 436, 438, 463.
 pacifica, 436, 442.
 perciloptera, 486.
 picata, 436, 446, 447.
 plumifera, 427.
 poiciloptila, 486.
 pusilla, 473.
 rectirostris, 414, 416, 417, 419, 421.
 rubicunda, 371, 372, 373, 375.
 sacra, 453, 454, 456.
 stagnatilis, 466.
 striata, 467.
 macrorhyncha, 468.
 stagnatilis, 466.
 sumatrana, 419, 421.
 gilberti, 419, 421.
 mathewsæ, 419, 421.
 sumatrana, 421.
 syrmatophora, 431.
 (Herodias) picata, 446.
Ardeiralla, 476, 477.
 flavicollis disneyi, 482, 483.
 gouldi, 479.
 melvillensis, 482.
 olivei, 482.
 gouldi, 479.
 sturmi, 477.
Ardeola, 472.
 pusilla, 473.
Ardeomega, 418.
Ardetta, 472.
 flavicollis, 479.
 gouldi, 479.
 macrorhyncha, 468.
 minuta, 472, 473.
 pusilla, 473.
 stagnatilis, 466.
Ardette stagnatilis, 466.
Arenaria, 240, 4.
 interpres, 5, 8, 9, 208.
 interpres, 5, 8.
 morinella, 8.
 leucophæa, 240, 241.
 leucophæa, 244.
 rubida, 244.
 tridactyla, 241, 244.
 morinella, 9.
arenaria, *Calidris*, 241.
 Tringa (Calidris), 241.
argentea, *Mathewsia rubicunda*, 376, 373.
arquata, *Numenius*, 167, 169.

INDEX.

- arquata*, *Numenius arquata*, 169.
Arquatella, 165.
arquatus, *Numenius*, 173.
aruensis, *Ardea*, 436, 447.
 —, *Tonophox*, 445.
Ascalopax, 286, 287.
asiatica, *Eupoda*, 84, 103, 107.
asiaticus, *Charadrius*, 68, 83, 84, 99, 104, 107, 108, 109, 111.
 —, *Cirrepidesmus*, 104, 107.
 —, *Eudromias*, 104.
 —, *Ochthodromus*, 82.
 —, *Xenorhynchus*, 407, 408.
assami, *Tringa ochropus*, 203.
assimilis, *Hypsibates leucocephalus*, 151, 145, 146, 150.
ater, *Hæmatopus*, 26.
 —, *Melanibyx*, 26.
atricapillus, *Numenius*, 176, 178.
atrifrons, *Charadrius*, 97.
 —, *Cirrepidesmus*, 81, 82, 83.
 —, — *mongolus*, 97.
 —, *Ochthodromus*, 81, 82.
Atites, 214.
aucklandica, *Gallinago*, 286, 287, 288, 291.
 —, *Scolopax*, 283.
audax, *Uroæetus*, 47.
auratus, *Totanus macularius*, 216.
aurita, *Actitis hypoleucos*, 216.
 —, *Heteropygia*, 256, 259.
 —, *Pisobia*, 246, 256, 259.
 —, *Tringa*, 216, 218, 258.
australasiæ, *Ardea*, 462.
 —, *Nycticorax*, 459.
 —, — *caledonicus*, 459, 462.
australasiana, *Antigone*, 373, 374, 376.
 —, *Laomedontia*, 373.
 —, *Limosa*, 192.
australasianus, *Grus*, 371, 373, 376.
 —, *Hæmatopus*, 15, 18, 21.
 —, — *niger*, 24, 26.
 —, *Numenius*, 170, 174.
 —, *Otis*, 363.
Australian Curlew, 170.
 — *Dotterel*, 320.
 — *Glossy Ibis*, 394.
 — *Long-billed Plover*, 358.
 — *Painted Snipe*, 308.
 — *Pratincole*, 324.
 — *Whimbrel*, 176.
australis, *Actiturus*, 255.
 —, *Actodromas*, 247.
 —, *Ardea flavicollis*, 479.
 —, *Austrotis*, 361.
 —, — *australis*, 363.
 —, *Botaurus*, 486.
 —, *Calidris*, 247.
 —, *Charadrius*, 68, 337, 339.
 —, — *australis*, 337.
 —, *Choriotis*, 363, 368.
australis, *Ciconia*, 408.
 —, *Cladorhynchus*, 154.
 —, *Eudromias*, 337, 338, 339.
 —, *Eudromius*, 322.
 —, *Eupodotis*, 363, 368.
 —, *Gallinago*, 61, 296, 299, 302.
 —, — *australis*, 296.
 —, — (*Scolopax*), 308.
 —, *Glareola*, 324.
 —, *Ibis*, 386.
 —, *Limnocinclus*, 255.
 —, *Morinellus*, 337.
 —, *Mycteria*, 408.
 —, *Numenius*, 170, 174.
 —, *Œdicnemus*, 346.
 —, *Otis*, 363.
 —, *Peltohyas*, 335, 337, 339.
 —, — *australis*, 337.
 —, — (*Eudromias*), 341.
 —, *Rhynchæa*, 308.
 —, *Rostratula*, 308.
 —, — *capensis*, 308.
 —, *Schæniclus*, 255.
 —, *Scolopax*, 283, 293, 296, 299, 308.
 —, *Squatarola*, 69.
 —, — *helvetica*, 69.
 —, *Totanus*, 296.
 —, *Tringa*, 255.
 —, *Xenorhynchus*, 408.
 —, — *asiaticus*, 408.
Austrotis, 361, 362.
 — *australis*, 361.
 — — *australis*, 363.
 — — *derbyi*, 368.
autumnalis, *Tringa*, 396.
Avocet, Eastern Red-necked, 160.
 —, Western Red-necked, 163.
Avocetta, 158.
Avosetta, 158.
avosetta, *Recurvirostra*, 158.
bairdi, *Heteropygia*, 246.
 —, *Pisobia*, 246, 256, 259.
 —, *Tringa*, 261.
balthicus, *Hæmatopus*, 18.
Banded Stilt, 154.
Bare-eyed Black Oystercatcher, 30.
bartrami, *Actitis*, 234.
 —, *Actiturus*, 234.
 —, *Totanus*, 235.
Bartramia, 233, 168.
 — *laticauda*, 234.
 — *longicauda*, 234, 233.
bartramia, *Euligia*, 234.
 —, *Totanus*, 234.
Bartramius, 233.
 — *longicaudus*, 234.
bartramius, *Actitis*, 234.
 —, *Actiturus*, 234.

THE BIRDS OF AUSTRALIA.

- bartramius*, *Totanus*, 234.
 —, *Tringoides*, 234.
baueri, *Limosa*, 186, 192.
 —, — *lapponica*, 193.
 —, *Vetola lapponica*, 192, 196.
bernieri, *Hæmatopus niger*, 29, 28.
 —, — *unicolor*, 27, 29.
bicincta, *Hiaticula*, 86.
bicinctus, *Ægialitis*, 86, 93.
 —, *Charadrius*, 86, 109, 113.
 —, — *bicinctus*, 86.
 —, *Cirrepidesmus*, 86, 82, 83, 84, 96.
 —, *Cursorius*, 336.
 —, *Ochthodromus*, 81, 86, 93.
bifrontatus, *Charadrius*, 109, 111, 112, 124.
 Bittern, East Australian, 486.
 —, Large-billed Mangrove-, 468.
 —, Little, 473.
 —, — Mangrove-, 466.
 —, Northern Mangrove-, 470.
 —, — Yellow-necked Mangrove-, 479.
 —, Red Mangrove-, 471.
 —, West Australian, 489.
 —, Yellow-necked Mangrove, 482.
 Black-billed Spoonbill, 400.
 — -breasted Plover, 59.
 — -fronted Dotterel, 137.
 — -necked Stork, 408.
 Blue Reef-Heron, 450.
bonapartei, *Tringa*, 246.
borealis, *Phæopus*, 169.
Botaurus, 484.
 — *australis*, 486.
 — *flavicollis*, 479.
 — *minutus pusilla*, 473.
 — *pæciloptila*, 486.
 — *pæciloptilus*, 486, 489.
 — *poicilopterus*, 486.
 — *poiciloptilus*, 486.
 — — *poiciloptilus*, 486, 485, 489.
 — — *westralensis*, 489, 485.
 — *stellaris*, 484.
brasiliensis, *Gallinago*, 292, 294.
brehmii, *Scolopax*, 285.
brevipes, *Actites*, 207.
 —, *Gambetta*, 207.
 —, *Helodromas*, 198.
 —, *Heteractitis*, 207.
 —, *Heteroscelus*, 206, 208, 209, 210, 211, 222.
 —, — *incanus*, 207, 213.
 —, *Limosa*, 187, 192.
 —, — *melanura*, 187.
 —, *Totanus*, 207, 211.
 —, — *incanus*, 208.
 —, *Tringa*, 207, 208.
 Bridled Plover, 350.
broomei, *Burhinus magnirostris*, 356, 352.
buchanani, *Demigretta sacra*, 456.
bullaragang, *Ardea*, 442.
bullaranjaus, *Ardea*, 442.
Burhinus, 344, 342, 343, 350, 351.
 — *grallarius*, 345, 351, 353, 355, 356, 359.
 — *magnirostris*, 344, 345, 351.
 — — *broomei*, 356, 352.
 — — *magnirostris*, 345, 346, 351, 355, 356.
 — — *ramsayi*, 355, 351.
 — — *rufescens*, 353, 352.
 — *novæ-hollandiæ*, 345.
Burrhinus, 344.
 Bustard, Eastern, 363.
 —, Western, 368.
Butor, 484.
Butorides, 464.
 — *flavicollis*, 479, 482.
 — *javanica*, 464, 466, 470.
 — — *littleri*, 470.
 — — *macrorhyncha*, 468.
 — — *stagnatilis*, 466.
 — *macrorhyncha*, 468.
 — *macrorhynchus*, 469.
 — *rogersi*, 471, 464, 465, 466.
 — *stagnatilis*, 466, 481.
 — *striata littleri*, 470, 465.
 — — *macrorhyncha*, 468, 465.
 — — *stagnatilis*, 466, 465.
caledonicus, *Nycticorax*, 459.
Calidris, 165, 240, 269.
 — *albescens*, 247.
 — *arenaria*, 241.
 — *australis*, 247.
calidris, *Erythroscelus*, 198.
 —, *Totanus*, 197.
callæas, *Charadrius*, 54.
Calobatus, 4.
canescens, *Glottis*, 198.
 —, *Totanus*, 225.
cantianus, *Ægialitis*, 110.
 —, *Charadrius*, 110, 111.
canus, *Ægialitis*, 117, 120.
Canutus, 269, 274.
 — *canutus*, 269, 270, 274.
 — — *rogersi*, 270, 271.
 — — *rufus*, 273.
 — *magnus*, 275, 276.
canutus, *Canutus*, 269, 270, 274.
 —, *Tringa*, 270, 274.
capensis, *Hæmatopus*, 27.
 —, *Rostratula*, 306.
Carphibis, 385, 392.
 — *spinicollis*, 386, 385, 390.
Casmerodius, 430.
cenchroides, *Cerchneis*, 62.
Cerchneis cenchroides, 62.
Charadias, 123.
Charadrias, 123.
Charadrius, 123, 32, 67, 81, 98, 108, 126, 135, 320, 335.
 — *alexandrina*, 111, 113.
 — *alexandrinus*, 68, 111, 112.

INDEX.

- Charadrius apricarius*, 68, 75, 111.
 — *asiaticus*, 68, 83, 84, 99, 104, 107, 108, 109, 111.
 — *atrifrons*, 97.
 — *auratus longipes*, 75.
 — *australis*, 68, 337, 339.
 — — *australis*, 337.
 — — *whitlocki*, 339.
 — *bicinctus*, 86, 109, 113.
 — — *bicinctus*, 86.
 — — *incertus*, 86.
 — *bifrontatus*, 109, 111, 112, 124.
 — *callæus*, 54.
 — *cantianus*, 110, 111.
 — *cinclus*, 5.
 — *circumcinctus*, 109.
 — *cirrhepidesmos*, 92.
 — *collaris*, 110, 111, 112, 113.
 — *columbinus*, 99.
 — *columboides*, 100.
 — *cucullatus*, 112, 124, 125, 128, 130, 131, 132.
 — — *cucullatus*, 128, 127, 133.
 — — *torbayi*, 133, 134.
 — — *tregellasi*, 133, 127.
 — *curbepedesmos*, 92.
 — *dealbatus*, 110.
 — *dominicus*, 68, 75, 79, 111, 208.
 — — *fulvus*, 75.
 — *dubius*, 68, 109, 111, 112, 124.
 — *falklandicus*, 110, 111, 112, 113, 114.
 — *forbesi*, 109, 111, 112, 124.
 — *fraenatus*, 345, 350.
 — *frontalis*, 109, 111.
 — *fulvus*, 68, 72, 74, 143.
 — *fuscus*, 74, 80, 99.
 — *gallinaceus*, 44.
 — *geoffroyi*, 84, 99, 109, 110.
 — *giganteus*, 345.
 — *gigas*, 99.
 — *glaucopus*, 74.
 — *grallarius*, 345, 350.
 — *griseus*, 74, 80, 99.
 — *gularis*, 92.
 — *helveticus*, 68, 70.
 — *hiaticula*, 68, 82, 99, 109, 111, 112, 113, 123, 124, 125, 132, 336.
 — *hypomelanus*, 69.
 — *hypomelus*, 69.
 — *inconspicuus*, 96, 97.
 — *inornatus*, 92.
 — *jerdoni*, 109.
 — *kittlitzii*, 112.
 — *leschenaultii*, 99.
 — *leucopolius*, 113.
 — *lobatus*, 44.
 — *longipes*, 75.
 — *magnirostris*, 345, 350, 351.
 — *marginatus*, 110, 111, 112, 113, 117, 120.
 — *melanops*, 37, 111, 112, 119, 124, 125, 137.
Charadrius melanops marnghii, 141, 143.
 — — *melanops*, 137, 141.
 — *melodus*, 109, 111, 112, 124.
 — *minor*, 109.
 — *modestus*, 37, 68.
 — *monachus*, 109, 128, 130.
 — *mongolians*, 96.
 — *mongolicus*, 75, 82, 109, 110.
 — *mongolius*, 92.
 — *mongolus*, 92, 111, 113, 114.
 — *montanus*, 84, 110.
 — *morinellus*, 68, 71, 111, 336.
 — *nigrifrons*, 109, 111, 137.
 — *nivosus*, 110, 111, 112, 113.
 — *novæ-zelandiæ*, 109, 111, 112, 124.
 — *obscurus*, 109.
 — *occidentalis*, 110, 111, 112.
 — *orientalis*, 75.
 — *pallidus*, 111, 112.
 — *pardela*, 69.
 — *pectoralis*, 59, 64.
 — *pecuarius*, 110, 111, 112, 113, 114.
 — *peroni*, 110, 111, 112, 113.
 — *placidus*, 109, 111, 112, 113.
 — *pluvialis*, 68, 74, 125.
 — — *orientalis*, 75.
 — *pyrrhothorax*, 92, 96, 97.
 — *rubricollis*, 130.
 — *ruficapillus*, 110, 111, 112, 113, 117, 118, 121.
 — — *ruficapillus*, 117.
 — — *tormenti*, 117, 121.
 — *rufinellus*, 97.
 — *rufinus*, 99.
 — *rufiventer*, 35.
 — *rufiventris*, 35, 37, 68.
 — *russatus*, 141, 142.
 — *sanctæhelenæ*, 110, 111, 112, 113, 114.
 — *sanguineus*, 92.
 — *semipalmatus*, 109, 111, 112, 123, 124.
 — *sociabilis*, 68.
 — *sonneratii*, 92.
 — *squatarola*, 69, 71, 72.
 — *taitensis*, 74.
 — *tenellus*, 110.
 — *totanirostris*, 68.
 — *tricollaris*, 109, 111, 112, 124.
 — *tricolor*, 41, 59, 64.
 — *vanelloides*, 59, 64.
 — *venustus*, 111, 112, 113.
 — *veredus*, 68, 83, 84, 104.
 — *verginicus*, 68.
 — *virginianus*, 75.
 — *virginicus*, 68.
 — *vociferus*, 68, 109, 111, 112, 113.
 — *wilsoni*, 83, 110.
 — *xanthocheilus*, 74, 104, 107.
 — (*Squatarola*) *helvetica*, 69.
 — (—) *squatarola*, 69.
 Chestnut-breasted Plover, 86.

THE BIRDS OF AUSTRALIA.

- Chettusia*, 68.
 — *gallinacea*, 45.
 — *lobata*, 45.
 — *miles*, 52.
 — *personata*, 52.
 — (*Lobivanellus*) *pectoralis*, 59.
chinensis, *Erolia ferruginea*, 266.
 —, *Schœniclus*, 266.
 —, *Tringa* (*Pelidna*), 266.
Choriotis, 361, 362.
 — *arabs*, 362.
 — *australis*, 363, 368.
 — — *derbyi*, 363, 368.
Chubbia, 291.
Ciconia australis, 408.
 — *leucoptera*, 408.
Cinclus, 4.
 — *interpres*, 5.
cinclus, *Charadrius*, 5.
 —, *Tringa*, 242.
cincta, *Erythrogonyx*, 35, 37.
cinctus, *Erythrogonyx*, 35.
 —, *Erythrogonyx*, 31, 35, 37, 38, 137.
 —, — *cinctus*, 35, 34.
 —, *Vanellus* 35, 37.
cinerea, *Ardea*, 412, 414, 417.
 —, *Galachrysis*, 321, 322.
 —, *Limosa*, 221.
 —, — (*Simorhynchus*), 221.
 —, *Terekia*, 208, 221.
 —, *Tringa*, 221.
 —, — (*Terekia*), 221.
cinereus, *Rhynchosimus*, 221.
 —, *Totanus*, 221.
 —, *Xenus*, 220, 221.
circumcinctus, *Charadrius*, 109.
Circus gouldi, 48.
Cirrepidesmus, 81, 98, 109, 113.
 — *asiaticus*, 104, 107.
 — *atrifrons*, 81, 82, 83.
 — *bicinctus*, 86, 82, 83, 84, 96.
 — *geoffroyi*, 82, 92.
 — *mongolicus*, 93.
 — *mongolus*, 84, 90, 97, 102.
 — — *atrifrons*, 97.
 — — *mongolus*, 92, 85, 97.
 — *pyrrhothorax*, 82, 83.
cirrhepidesmos, *Charadrius*, 92.
Cirrhepidesmus, 81.
Cladorhynchus, 153, 144, 156.
 — *australis*, 154.
 — *leucocephalus*, 154, 150, 153.
 — — *rotnesti*, 154.
 — *orientalis*, 154.
 — *pectoralis*, 154.
Cœnocorypha, 286, 287, 291.
collaris, *Antigone*, 371.
 —, *Charadrius*, 110, 111, 112, 113.
 —, *Leucopoliis*, 114.
 —, *Mathewsia*, 371.
columbina, *Hiaticula*, 99.
columbinus, *Charadrius*, 99.
columboides, *Charadrius*, 100.
concolor, *Demigretta*, 448, 449.
cooktowni, *Demigretta matook*, 450.
 —, — *sacra*, 450.
coromanda, *Glareola* (*Pratincola*), 330.
Coromandel Pratincole, 330, 334.
Cracticornis, 167.
Cractiornis, 167.
Crane, East Australian, 373.
 —, West Australian, 376.
crassirostris, *Eudromias*, 100.
 —, *Tringa*, 255, 274, 275, 276, 277.
cristata, *Parra*, 314.
cristatus, *Vanellus*, 71.
Crocethia, 240.
cucullata, *Hiaticula*, 128.
cucullatus, *Ægialitis*, 109, 125, 128, 131, 133.
 —, *Charadrius*, 112, 124, 125, 128, 130, 131, 132.
 —, — *cucullatus*, 128, 127, 133.
 —, *Xiphidiopterus*, 41.
curbepedesmos, *Charadrius*, 92.
Curlew, Australian, 170.
 — *-Sandpiper*, Eastern, 266.
Cursorius, 33, 107, 320, 321, 322, 336.
 — *bicinctus*, 336.
 — *fulvus*, 333.
 — *isabellinus*, 104, 106.
cyanopus, *Numenius*, 170, 167, 168, 173, 177, 222, 226.
Cypselus pacificus, 327.
damacensis, *Actodromas*, 251.
 —, *Limonites*, 246, 251.
 —, *Pisobia*, 251, 246, 264.
 —, *Totanus*, 245, 251.
 —, *Tringa*, 247, 251.
dealbatus, *Charadrius*, 110.
delicata, *Gallinago*, 294.
Delopygia, 245.
Demigretta, 448.
 — *greyi*, 456.
 — *jugularis*, 450, 452.
 — *novæ-hollandiæ*, 438.
 — *sacra*, 450, 453, 456.
Demigretta, 448, 449.
 — *concolor*, 448.
 — *greyi*, 456, 450, 452.
 — *matook cooktowni*, 450.
 — *sacra*, 448, 450.
 — — *buchanani*, 456.
 — — *cooktowni*, 450.
 — — *greyi*, 456.
 — — *tormenti*, 450.
 — *tormenti*, 450.
derbyi, *Austrotis australis*, 368.
 —, *Choriotis australis*, 363, 368.
disneyi, *Ardeiralla flavicollis*, 482, 483.

INDEX.

- Ditelmatis*, 282.
 — *hardwickii*, 296, 300, 301, 302.
dominicus, *Charadrius*, 68, 75, 79, 111, 208.
 —, *Pluvialis*, 79.
 Dotterel, Australian, 320.
 —, Black-fronted, 137.
 —, Double-banded, 86.
 —, Eastern, 337.
 —, Hooded, 128.
 —, Large Sand-, 99.
 —, Mongolian Sand-, 92.
 —, Oriental, 104.
 —, Pale Red-capped, 121.
 —, Red-capped, 117.
 —, — -kneed, 35.
 —, Western, 339.
 —, — Black-fronted, 141.
 —, — Hooded, 133.
 —, — Red-kneed, 38.
 Double-banded Dotterel, 86.
Dromochelidon, 329.
Dupetor, 476, 477.
 — *flavicollis*, 476, 477.
 — — *gouldi*, 479, 478, 482.
 — — *olivei*, 482, 478.
 — *gouldi*, 479, 482, 489.
dubia, *Ægialitis*, 68, 109.
dubius, *Charadrius*, 68, 109, 111, 112, 124.
 —, *Ixobrychus minutus*, 473.
 East Australian Bittern, 486.
 — — Black Oystercatcher, 24.
 — — Crane, 373.
 — — Snipe, 296.
 Eastern Barred-rumped Godwit, 192.
 — Black-tailed Godwit, 187.
 — Broad-billed Sandpiper, 279.
 — Bustard, 363.
 — Comb-crested Jacana, 315.
 — Common Sandpiper, 216.
 — Curlew-Sandpiper, 266.
 — Dotterel, 337.
 — Golden Plover, 74.
 — Green Sandpiper, 203.
 — Greenshank, 225.
 — Grey Heron, 414.
 — — Plover, 69.
 — Knot, 270.
 — Masked Plover, 55.
 — Red-necked Avocet, 160.
 — Sanderling, 241.
 — Terek Sandpiper, 221.
 — Turnstone, 5.
 — Wood-Sandpiper, 230.
Egatheus, 378, 379, 392, 393.
 — *falcinellus*, 394.
 Egret, Lesser, 424.
 —, Pied, 446.
 —, Plumed, 427.
 —, White, 431.
Egretta, 422, 423, 426, 430, 449.
 — *alba neglecta*, 431.
 — — *syrmatophorus*, 431.
 — *garzetta*, 422.
 — — *immaculata*, 424.
 — *intermedia plumifera*, 427.
 — *neglecta*, 431.
 — *novæ-hollandiæ*, 438.
 — *plumifera*, 427.
 — *syrmatophora*, 431.
egretta, *Herodias*, 430, 434.
egrettoides, *Herodias*, 427.
Elseya, 135, 125.
 — *melanops*, 126.
 — — *melanops*, 137, 136.
 — — *russata*, 141, 136.
empusa, *Actitis*, 216, 219.
 —, *Totanus*, 216.
 —, *Tringoides*, 216.
Enalius, 285, 286, 287.
 — *sabinii*, 285, 286.
Ereunetes, 165.
Erodiscus, 472.
Erolia, 264, 175, 246, 265, 274.
 — *acuminata*, 255.
 — *ferruginea*, 264, 266.
 — — *chinensis*, 266.
 — *maculata*, 263.
 — — *acuminata*, 263.
 — — *maculata*, 263.
 — *variegata*, 265.
Erythrogonys, 31.
Erythrogonus, 31.
 — *cinctus*, 35.
Erythrogonyx, 31, 41, 68.
 — *cincta*, 35, 37.
 — *cinctus*, 31, 35, 37, 38, 137.
 — — *cinctus*, 35, 34.
 — — *mixtus*, 38, 34, 35.
 — *rufiventris*, 35.
Erythroscelis, 198.
Erythroscelus, 198, 199.
 — *calidris*, 198.
 — *fuscus*, 198.
Esacus, 342, 343, 357.
 — *magnirostris*, 358.
 — — *melvillensis*, 358.
 — — *neglectus*, 358.
 — — *queenlandicus*, 358.
Eudromias, 67, 107, 335.
 — *asiaticus*, 104.
 — *australis*, 337, 338, 339.
 — *crassirostris*, 100.
 — *geoffroyi*, 100.
 — *magnirostris*, 100.
 — *mongolicus*, 93.
 — *morinellus*, 68, 96.
 — *veredus*, 104.
Eudromius australis, 322.
Eugallinago, 294.

THE BIRDS OF AUSTRALIA.

- Euliga*, 233.
Euligia, 233.
 — *bartramia*, 234.
eulophotes, *Herodias*, 448.
Eupoda, 103, 81, 108.
 — *asiatica*, 84, 103, 107.
 — *vereda*, 104, 82, 83, 84.
Eupodella, 83, 84.
Eupodes, 83.
Eupodotis, 361.
 — *australis*, 363, 368.
Eurynorhynchus, 165.
exilis, *Ixobrychus*, 472.
- Falcinellus*, 264, 278, 392, 393.
 — *igneus*, 394.
falcinellus, *Egatheus*, 394.
 — *Ibis*, 394.
 — *Limicola*, 278.
 — *Plegadis*, 392, 394.
 — *Scolopax*, 281.
 — *Tantalus*, 397.
 — *Threskiornis*, 379.
falklandica, *Ægialitis*, 115.
falklandicus, *Charadrius*, 110, 111, 112, 113, 114.
 — *Leucopoliis* (*Pernettya*), 114.
Fedoa, 184.
fedoa, *Limosa*, 184.
ferruginea, *Erolia*, 264, 266.
finschi, *Hæmatopus*, 19, 20.
 — *ostralegus*, 22.
fitzroyi, *Geronticus spinicollis*, 386.
 — *Rostratula australis*, 308.
flavicollis, *Ardetta*, 479.
 — *Botaurus*, 479.
 — *Butoroides*, 479, 482.
 — *Dupetor*, 476, 477.
flavipes, *Gambetta*, 198.
 — *Platalea*, 404.
 — *flavipes*, 404.
 — *Plateibis*, 404.
 — *Platibis*, 404, 401, 403.
 — *Spatherodia*, 404.
 — *Totanus*, 197, 199.
flavirostris, *Notophox*, 446, 447.
 — *Tonophox aruensis*, 446.
forbesi, *Charadrius*, 109, 111, 112, 124.
foxii, *Limosa*, 192.
fraenatus, *Charadrius*, 345, 350.
frenata, *Gallinago*, 292.
 — *Scolopax*, 283.
frontalis, *Ægialophilus*, 114, 115, 125.
 — *Charadrius*, 109, 111.
fuliginosa, *Gambetta*, 211.
fuliginosus, *Hæmatopus*, 24, 26, 29, 30.
 — *niger*, 24, 17, 29, 30.
 — *unicolor*, 24, 27, 28, 29.
 — *Melanibyx*, 26, 29.
 — *Totanus*, 211.
fulvus, *Charadrius*, 68, 72, 74, 143.
- fulvus*, *Charadrius dominicus*, 75.
 — *Cursorius*, 333.
 — *Pluvialis*, 75.
 — *dominicus*, 74, 70, 80.
fuscicollis, *Heteropygia*, 246, 260.
 — *Pisobia*, 245, 246.
fuscus, *Charadrius*, 74, 80, 99.
 — *Totanus*, 197, 198.
 — *Erythroscelus*, 198.
- Galachrysia*, 321.
 — *cinerea*, 321, 322.
 — *lactea*, 321, 322.
Galactochrysea, 321.
galinaceus, *Vanellus*, 44.
gallinacea, *Chettusia*, 45.
 — *Irediparra*, 314.
 — *Parra*, 314, 315, 316, 318.
gallinaceus, *Charadrius*, 44, 51.
 — *Hydralector*, 315, 316, 318.
 — *Lobivanellus*, 44.
 — *Vanellus*, 44.
Gallinago, 284, 285, 286, 287, 291, 293.
 — *æquatorialis*, 294.
 — *aucklandica*, 286, 287, 288, 291.
 — *australis*, 61, 296, 299, 302.
 — *australis*, 296.
 — *oweni*, 302, 305.
 — *brasiliensis*, 292, 294.
 — *delicata*, 294.
 — *frenata*, 292.
 — *gallinago*, 282, 289, 293, 294, 298.
 — *gigantea*, 286, 288, 292.
 — *hardwickii*, 282, 295, 296.
 — *heterocerca*, 302, 304, 305.
 — *imperialis*, 288, 291.
 — *jamesoni*, 288.
 — *macrodactyla*, 294.
 — *major*, 294.
 — *media*, 294.
 — *megala*, 295, 300, 302, 305.
 — *nemoricola*, 288, 292.
 — *nobilis*, 294.
 — *paraguayæ*, 294.
 — *solitaria*, 289.
 — *stenura*, 295, 302.
 — *stricklandi*, 288, 291.
 — *undulata*, 286, 288, 292.
 — (*Scolopax*) *australis*, 308.
gallinago, *Gallinago*, 282, 289, 293, 294, 298.
 — *Odura*, 287.
 — *Scolopax*, 283, 287, 288, 289.
 — *Telmatias*, 284, 285.
gallinula, *Lymnocyptes*, 293.
 — *Scolopax*, 283, 285, 286, 287, 289, 290, 293, 294.
Gambetta, 184.
 — *brevipes*, 207.
 — *flavipes*, 198.
 — *fuliginosa*, 211.

INDEX.

- Gambetta griseopyga*, 207.
 — *melanoleuca*, 198.
 — *oceanica*, 211.
 — *pulverulenta*, 207.
 — *pulverulentus*, 207.
Garzetta, 422, 426.
 — *immaculata*, 424, 425.
 — *nigripes*, 424, 425.
garzetta, *Ardea*, 425.
 —, *Egretta*, 422.
geoffroyi, *Ægialitis*, 99, 143.
 —, *Charadrius*, 84, 99, 109, 110.
 —, *Cirrepidesmus*, 82, 92.
 —, *Eudromias*, 100.
 —, *Hiaticula*, 99.
 —, *Ochthodromus*, 92, 100.
 —, *Pagoa*, 99, 82, 83, 98, 102, 208, 222, 295.
Geronticus spinicollis, 382, 386, 390, 405.
 — — *fitzroyi*, 386.
 — — *spinicollis*, 386.
 — *strictipennis*, 380.
gigantea, *Gallinago*, 286, 288, 292.
 —, *Homoptilura*, 292.
 —, *Scolopax*, 283.
 —, *Xylocota*, 286.
giganteus, *Charadrius*, 345.
 —, *Ædicnemus*, 345.
gigas, *Ægialitis*, 99.
 —, *Charadrius*, 99.
gilberti, *Ardea sumatrana*, 419, 421.
Glareola, 329, 321, 325.
 — *australis*, 324.
 — *grallaria*, 324.
 — *isabella*, 324.
 — *isabellina*, 324.
 — *ocularis*, 321, 322.
 — *orientalis*, 330, 334.
 — *pratincola*, 329, 330.
 — — *maldivarum*, 330, 322.
 — *torquata*, 330.
 — (*Pratincola*) *coromanda*, 330.
 — (—) *madraspatana*, 330.
 — (—) *maldivarum*, 330.
glareola, *Actitis*, 230.
 —, *Rhyacophilus*, 229.
 —, *Totanus*, 230.
 —, *Tringa*, 230.
 —, *Trynga*, 207.
glaucopus, *Charadrius*, 74.
Glottis, 224, 191.
 — *canescens*, 198.
 — *glottoides*, 225.
 — *horsfieldii*, 200.
 — *nebularius*, 197, 198, 224, 225.
 — — *glottoides*, 225.
 — — *nivigula*, 225.
 — *vigorsii*, 225.
glottis, *Totanus*, 225, 231.
glottoides, *Glottis*, 225.
 —, *Glottis nebularius*, 225.
glottoides, *Limosa*, 225.
 —, *Totanus*, 225.
 —, — *nebularius*, 225.
 Godwit, Eastern Barred-rumped, 192.
 —, — Black-tailed, 187.
gouldi, *Ardeiralla*, 479.
 —, — *flavicollis*, 479.
 —, *Ardetta*, 479.
 —, *Circus*, 48.
 —, *Dupetor*, 479, 482, 489.
 —, — *flavicollis*, 479, 478, 482.
 —, *Xanthocnus*, 479.
grallaria, *Glareola*, 324.
 —, *Stiltia*, 324.
grallarius, *Burhinus*, 345, 351, 353, 355, 356, 359.
 —, *Charadrius*, 345, 350.
 —, *Himantopus*, 345.
 —, *Ædicnemus*, 345, 351, 353, 355, 356.
 Great Knot, 275.
 — -billed Heron, 419.
 — - — Plover, 350.
 Greenshank, Eastern, 225.
 —, Little, 200.
 Grey-rumped Sandpiper, 207.
greyi, *Demigretta*, 456, 450, 452.
 —, — *sacra*, 456.
 —, *Herodias*, 456.
griseopyga, *Gambetta*, 207.
griseopygius, *Totanus*, 207, 210.
griseus, *Charadrius*, 74, 80, 99.
Grus antarctica, 373, 375.
 — *australasianus*, 371, 373, 376.
 — *leucogeranus*, 415.
gryseopygus, *Totanus*, 207.
Guinetta, 214.
gularis, *Charadrius*, 92.
 —, *Lepterochus*, 123.
gwendoleneæ, *Zonifer tricolor*, 65, 58, 59.
Hæmantopus, 11.
Hæmatopus, 11.
 — *ater*, 26.
 — *australasianus*, 15, 18, 21.
 — *balthicus*, 18.
 — *capensis*, 27.
 — *finschi*, 19, 20.
 — *fuliginosus*, 24, 26, 29, 30.
 — *hypoleuca*, 18.
 — *leucopus*, 22.
 — *longirostris*, 15, 17, 18, 19, 20, 23, 29.
 — — *longirostris*, 15, 20, 23.
 — — *mattingleyi*, 15, 20, 21.
 — *moquini*, 27.
 — *niger*, 11, 25, 26.
 — — *africanus*, 26, 27.
 — — *americanus*, 26.
 — — *australasianus*, 24, 26.
 — — *bernieri*, 29, 28.
 — — *fuliginosus*, 24, 17, 29, 30.
 — — *meadewaldoi*, 27.

THE BIRDS OF AUSTRALIA.

- Hæmatopus niger niger*, 27.
 ——— *oceanicus*, 26.
 ——— *ophthalmicus*, 30, 28.
 ——— *unicolor*, 28.
 ——— *ophthalmicus*, 26, 30.
 ——— *orientalis*, 18.
 ——— *osculans*, 19, 20, 21.
 ——— *ostralegus*, 11, 12, 13, 17, 18, 19, 20, 21, 22.
 ——— *finschi*, 22.
 ——— *longirostris*, 15, 11, 14, 21, 22, 24, 25.
 ——— *osculans*, 21.
 ——— *ostralegus*, 20, 21.
 ——— *picatus*, 23, 14, 21.
 ——— *picatus*, 18, 23.
 ——— *quoyi*, 12.
 ——— *reischeki*, 19, 22.
 ——— *unicolor*, 22, 24, 26, 27, 29.
 ——— *bernieri*, 27, 29.
 ——— *fuliginosus*, 24, 27, 28, 29.
 ——— *ophthalmicus*, 27, 30.
Hæmotopus, 11.
hardwickii, *Ditelmatis*, 296, 300, 301, 302.
 ———, *Gallinago*, 282, 295, 296.
 ———, *Scolopax*, 293, 296.
harterti, *Lobibyx miles*, 55, 43, 54.
Helenægialis, 114, 115.
Helodroma, 202.
Helodromas, 175, 197, 202, 229.
 ——— *brevipes*, 198.
 ——— *incanus*, 198.
 ——— *ochropus*, 230, 231.
Helodromos, 202.
Helodromus, 202.
 ——— *ochropus*, 203.
helvetica, *Charadrius* (*Squatarola*), 69.
 ———, *Squatarola*, 69.
helveticus, *Charadrius*, 68, 70.
Hemi-egretta, 448.
Hemigarzetta, 448.
Herodias, 430, 423, 426.
 ——— *alba*, 415, 431, 434.
 ——— *syrmatophora*, 431, 428.
 ——— *timoriensis*, 431.
 ——— *egretta*, 430, 434.
 ——— *egretioides*, 427.
 ——— *eulophotes*, 448.
 ——— *greyi*, 456.
 ——— *immaculata*, 424.
 ——— *intermedia*, 427.
 ——— *jugularis*, 450.
 ——— *melanopus*, 424.
 ——— *novæ-hollandiæ*, 438.
 ——— *pannosa*, 123.
 ——— *picata*, 446.
 ——— *plumiferus*, 427.
 ——— *syrmatophora*, 424, 431, 435.
 ——— *timoriensis*, 428, 431, 434.
Heron, Blue Reef-, 450.
 ———, Eastern Grey, 414.
 ———, Great-billed, 419.
Heron, Night-, 459.
 ———, Sacred, 453.
 ———, White-fronted, 438.
 ———, ——— -necked, 442.
 ———, ——— Reef-, 456.
Heteractitis, 206.
 ——— *brevipes*, 207.
 ——— *incanus*, 212.
heterocerca, *Gallinago*, 302, 304, 305.
Heteropygia, 245, 246, 258, 259.
 ——— *acuminata*, 218, 246, 256, 258, 259.
 ——— *aurita*, 256, 259.
 ——— *bairdi*, 246.
 ——— *fuscicollis*, 246, 260.
 ——— *maculata*, 246, 258, 259, 260.
Heteroscelus, 206.
 ——— *brevipes*, 206, 208, 209, 210, 211, 222.
 ——— *incanus*, 206, 207, 209, 210, 212.
 ——— *brevipes*, 207, 213.
 ——— *incanus*, 211.
 ——— *oceanicus*, 212.
Hiaticula, 109, 123.
 ——— *bicincta*, 86.
 ——— *columbina*, 99.
 ——— *cucullata*, 128.
 ——— *geoffroyi*, 99.
 ——— *inornata*, 82, 92, 96, 99.
 ——— *monacha*, 128.
 ——— *mongola*, 92.
 ——— *nigrifrons*, 137.
 ——— *ruficapilla*, 117.
hiaticula, *Ægialitis*, 68, 93, 94, 96, 110, 123.
 ———, *Charadrius*, 68, 82, 99, 109, 111, 112, 113, 123, 124, 125, 132, 336.
 High-legged Plover, 350.
hilli, *Nycticorax caledonicus*, 459.
Himantellus, 144.
Himantopus, 144.
 ——— *grallarius*, 345.
 ——— *leucocephalus*, 146, 150, 151.
 ——— *novæ-hollandiæ*, 146, 149, 160.
 ——— *palmatus*, 154, 156.
 ——— *pectoralis*, 154.
 ——— *picatus*, 150.
 ——— *rubricollis*, 160.
 ——— *seebohmi*, 146, 150.
himantopus, *Hypsibates*, 144.
Holmesia, 287.
Homoptilura, 285, 286, 287, 291.
 ——— *gigantea*, 292.
Homoscolopax, 291.
 Hooded Dotterel, 128.
Hoplopterus pectoralis, 59.
 ——— *tricolor*, 59.
horsfieldii, *Glottis*, 200.
 ———, *Iliornis stagnatilis*, 200.
 ———, *Limosa*, 200.
 ———, *Spilura*, 286.
 ———, *Totanus*, 200.
hudsonicus, *Phæopus*, 169.

INDEX.

- Hydralector*, 314.
 — *gallinaceus*, 315, 316, 318.
 — *novæ-guinææ*, 316.
 — *novæ-hollandiæ*, 315, 316.
hypoleuca, *Hæmatopus*, 18.
hypoleucos, *Actites*, 201.
 —, *Actitis*, 212, 214, 215, 216, 219, 259.
 —, *Tringa*, 216.
hypoleucus, *Totanus*, 197.
 —, *Tringa*, 216.
 —, *Tringoides*, 216.
hypomelanus, *Charadrius*, 69.
hypomelus, *Charadrius*, 69.
 —, *Squatarola squatarola*, 69.
Hypsibates, 144, 153, 158.
 — *himantopus*, 144.
 — *leucocephalus*, 150, 151, 163.
 — — *albus*, 150.
 — — *assimilis*, 151, 145, 146, 150.
 — — *leucocephalus*, 146, 145, 150, 151.
 — — *timorensis*, 150.

Ibis, New Holland, 386.
 —, Straw-necked, 386.
 —, West Australian, 376.
 —, White, 380.
Ibis, 378, 379, 392, 393.
 — *æthiopicus*, 379.
 — *australis*, 386.
 — *falcinellus*, 394.
 — *lamellicollis*, 386.
 — *lathamii*, 386.
 — *molucca*, 380.
 — — *alligator*, 380, 383.
 — — *strictipennis*, 380.
 — *peregrina*, 394.
 — *spenicollis*, 386.
 — *strictipennis*, 380.
 — (*Falcinellus*) *igneus*, 394.
ibis, *Tantalus*, 379.
igneus, *Falcinellus*, 394.
 —, *Ibis* (*Falcinellus*), 394.
Iliornis, 197, 198, 199, 202, 229, 264.
 — *stagnatilis*, 197, 198.
 — — *horsfieldii*, 200.
Ilyornis, 197.
immaculata, *Ardea*, 424.
 —, *Egretta garzetta*, 424.
 —, *Garzetta*, 424, 425.
 —, *Herodias*, 424.
imperialis, *Gallinago*, 288, 291.
 —, *Scolopax*, 283.
 —, *Xylocota*, 286.
incana, *Actites*, 207.
 —, *Scolopax*, 211.
incanus, *Helodromas*, 198.
 —, *Heteractitis*, 212.
 —, *Heteroscelus*, 206, 207, 209, 210, 212.
 —, — *incanus*, 211.
 —, *Totanus*, 207, 211.

incanus, *Tringa*, 211, 212.
incertus, *Charadrius bicinctus*, 86.
inconspicuus, *Charadrius*, 96, 97.
indiana, *Limicola*, 221.
indica, *Parra*, 314.
inornata, *Hiaticula*, 82, 92, 96, 99.
inornatus, *Ægialitis*, 92.
 —, *Charadrius*, 92.
intermedia, *Ardea*, 429.
 —, *Herodias*, 427.
 —, *Mesophoyx*, 426.
interpre, *Arenaria*, 5, 8, 9, 208.
 —, — *interpre*, 5, 8.
 —, *Morinella*, 4, 5.
 —, — *interpre*, 5, 10.
 —, *Strepsilas*, 5.
Irediparra, 314.
 — *gallinacea*, 314.
 — — *melvillensis*, 318.
 — — *novæ-guinææ*, 316.
 — — *novæ-hollandiæ*, 315, 316, 318.
 — — *rothschildi*, 318, 316.
 — *novæ-hollandiæ*, 318.
isabella, *Glareola*, 324.
 —, *Rhimphalea*, 324.
 —, *Stiltia*, 324, 322, 323, 328, 332.
isabellina, *Glareola*, 324.
isabellinus, *Cursorius*, 104, 106.
Ixobrychus, 472.
 — *alisteri*, 473.
 — *exilis*, 472.
 — *minutus*, 472.
 — — *alisteri*, 473, 475.
 — — *dubius*, 473.
 — — *pusillus*, 473.

Jacana, 312.
 —, Eastern Comb-crested, 315.
 —, Western Comb-crested, 318.
jamesoni, *Gallinago*, 288.
 —, *Scolopax*, 283.
 —, *Xylocota*, 285, 286, 291.
javanica, *Butorides*, 464, 466, 470.
 —, *Terekia*, 221.
javanicus, *Totanus*, 221.
 —, *Xenus*, 220.
 —, — *cinereus*, 221.
jerdoni, *Charadrius*, 109.
jugularis, *Ardea*, 455.
 —, *Demiegretta*, 450, 452.
 —, *Herodias*, 450.

kitlitzii, *Charadrius*, 112.
Knot, Eastern, 270.
 —, Great, 275.

lactea, *Galachrysis*, 321, 322.
lamellicollis, *Ibis*, 386.
Laomedontia australasiana, 373.
lapponica, *Limosa*, 192.
 —, *Scolopax*, 184, 185, 191.

THE BIRDS OF AUSTRALIA.

- apponica*, *Vetola*, 191, 196.
 Large-billed Mangrove-Bittern, 468.
 — Sand-Dotterel, 99.
 Larger Pin-tailed Snipe, 302.
lateralis, *Afribyxx*, 41.
 —, *Vanellus*, 41.
lathamii, *Ibis*, 386.
 —, *Totanus*, 200.
laticauda, *Bartramia*, 234.
Leimonites, 245.
Leptorodius gularis, 123.
Leptorhynchus, 153.
 — *pectoralis*, 154, 156.
leschenaultii, *Ægialitis*, 100.
 —, *Charadrius*, 99.
 Lesser Egret, 424.
 — Masked Plover, 52.
leucocephala, *Recurvirostra*, 154.
leucocephalus, *Cladorhynchus*, 154, 150, 153.
 —, *Himantopus*, 146, 150, 151.
 —, *Hypsibates*, 150, 151, 163.
 —, — *leucocephalus*, 146, 145, 150, 151.
leucogeranus, *Grus*, 415.
leucophæa, *Ardea*, 414, 417.
 —, *Arenaria*, 240, 241.
 —, — *leucophæa*, 244.
 —, *Tringa*, 243.
Leucopoliis, 108, 109, 112, 113, 115, 124, 125.
 — *alexandrinus*, 108, 115, 125.
 — — *alexandrinus*, 114.
 — — *nivosus*, 114.
 — — *occidentalis*, 114.
 — *collaris*, 114.
 — *marginatus*, 108.
 — — *marginatus*, 114.
 — — *pallidus*, 114.
 — *peroni*, 114.
 — *ruficapillus*, 114.
 — — *ruficapillus*, 117, 116.
 — — *tormenti*, 121, 116.
 — *venustus*, 114.
 — (*Helenægialis*) *pecuarius*, 114, 126.
 — (—) *sanctæhelenæ*, 114, 126.
 — (*Pernettya*) *falklandicus*, 114.
leucopoliis, *Charadrius*, 113.
leucops, *Ardea*, 438.
leucoptera, *Ciconia*, 408.
 —, *Trynga*, 216.
leucopus, *Hæmatopus*, 22.
leucurus, *Totanus*, 203.
Limicola, 278, 220.
 — *falcinellus*, 278.
 — — *sibirica*, 279.
 — *indiana*, 221.
 — *platyrhyncha*, 279, 281.
 — *sibirica*, 279.
Limicula, 184, 185, 224, 278.
Limnocinclus, 254, 246, 258.
 — *acuminatus*, 255, 81, 254, 260, 262.
 — *australis*, 255.
Limnocinclus pectoralis, 254, 262, 263.
Limnocryptes, 284, 285, 287.
Limonites, 245, 246, 259.
 — *damacensis*, 246, 251.
 — *minuta*, 246.
 — *minutilla*, 246.
 — *ruficollis*, 74, 80, 246, 247.
 — *temmincki*, 246.
Limosa, 184, 165, 166, 191, 224, 264.
 — *ægocephala*, 187.
 — — *melanuroides*, 187.
 — *australasiana*, 192.
 — *baueri*, 186, 192.
 — *brevipes*, 187, 192.
 — *cinerea*, 221.
 — *fedoa*, 184.
 — *foxii*, 192.
 — *glottoides*, 225.
 — *horsfieldii*, 200.
 — *lapponica*, 192.
 — — *baueri*, 193.
 — — *novæ-zelandiæ*, 192.
 — — *uropygialis*, 193.
 — *limosa*, 184, 185, 186, 187, 189.
 — — *melanuroides*, 187.
 — *melanura*, 187.
 — — *brevipes*, 187.
 — — *melanuroides*, 187.
 — *melanuroides*, 187.
 — *novæ-zealandiæ*, 192.
 — *recurvirostra*, 221.
 — *rufa*, 192.
 — — *uropygialis*, 193.
 — *uropygialis*, 192.
 — (*Simorhynchus*) *cinerea*, 221.
limosa, *Limosa*, 184, 185, 186, 187, 189.
lineata, *Numenius arquata*, 169.
 Little Bittern, 473.
 — Greenshank, 200.
 — Mangrove-Bittern, 466.
 — Stint, 247.
 — Stone-Plover, 353.
 — Whimbrel, 180.
littleri, *Butorides javanica*, 470.
 —, — *striata*, 470, 464.
littorea, *Tringa*, 230.
lobata, *Chettusia*, 45.
 —, *Tringa*, 44, 50, 51.
lobatus, *Charadrius*, 44.
 —, *Lobibyx*, 40, 44, 45, 53.
 —, *Lobivanellus*, 32, 44, 51.
 —, *Pluvianus*, 45.
Lobibyx, 40, 63.
 — *lobatus*, 40, 44, 45, 53.
 — *miles*, 41, 52, 64.
 — — *harterti*, 55, 43, 54.
 — — *miles*, 54.
 — — *personatus*, 52, 43, 54, 55.
 — *novæ-hollandiæ*, 44, 32, 40, 41, 43, 45, 60, 64.

INDEX.

- Lobivanellus*, 40, 41.
 — *gallinaceus*, 44.
 — *lobatus*, 32, 44, 51.
 — *miles*, 52, 54, 55.
 — *pectoralis*, 59.
 — *personatus*, 45, 52, 54.
longicauda, *Bartramia*, 234, 233.
 —, *Totanus*, 234.
 —, *Tringa*, 234.
longicaudatus, *Actiturus*, 235.
longicaudus, *Actiturus*, 234.
 —, *Bartramius*, 234.
longipes, *Charadrius*, 75.
 —, — *auratus*, 75.
 —, *Ædicnemus*, 345, 351, 355.
 —, *Pluvialis*, 75.
longirostris, *Hæmatopus*, 11, 15, 17, 18, 19, 20, 23, 29.
 —, — *longirostris*, 15, 20, 23.
 —, — *ostralegus*, 15, 11, 14, 21, 22, 24, 25.
 —, *Numenius*, 167, 168.
 —, *Ostralegus*, 15.
 Long-tailed Sandpiper, 234.
 —-toed Stint, 251.
ludoviciana, *Parra*, 54.
luzoniensis, *Numenius*, 176.
 —, *Scolopax*, 176, 178.
Lymnocyptes, 285, 286, 293.
 —, *gallinula*, 293.

macrodactyla, *Gallinago*, 294.
 —, *Scolopax*, 283.
Macrodura, 294.
macrorhyncha, *Ardea*, 468.
 —, — *striata*, 468.
 —, *Ardetta*, 468.
 —, *Butorides*, 468, 469.
 —, — *javanica*, 468.
 —, — *striata*, 468, 465.
macrorhynchus, *Ægialitis*, 99.
Macrotarsus, 144.
maculata, *Actodromas*, 258, 261.
 —, *Ardea*, 459, 463.
 —, *Erolia*, 263.
 —, — *maculata*, 263.
 —, *Heteropygia*, 246, 258, 259, 260.
 —, *Pisobia*, 246, 261.
 —, *Tringa*, 261.
 Madras Pratincole, 330, 334.
madraspatana, *Glareola* (*Pratincola*), 330.
magna, *Tringa*, 275.
magnirostris, *Burhinus*, 344, 345, 351.
 —, — *magnirostris*, 345, 346, 351, 355, 356.
 —, *Charadrius*, 345, 350, 351.
 —, *Esacus*, 358.
 —, *Eudromias*, 100.
 —, *Ædicnemus*, 345.
 —, *Orthorhamphus*, 357, 358, 360.
magnus, *Canutus*, 275, 276.
 —, *Schoeniclus*, 275, 276, 277.

major, *Gallinago*, 294.
 —, *Numenius*, 170.
 —, *Ædicnemus*, 345.
 —, *Scolopax*, 283.
maldivarum, *Glareola pratincola*, 330, 322.
 —, — (*Pratincola*), 330.
 —, *Trachelia*, 330.
 —, — *pratincola*, 330.
 Maldivian Pratincole, 330, 334.
 Mangrove-Bittern, Large-billed, 468.
 — - —, Little, 466.
 — - —, Northern, 470.
 — - —, — Yellow-necked, 479.
 — - —, Red, 471.
 — - —, Yellow-necked, 482.
marginatus, *Charadrius*, 110, 111, 112, 113, 117, 120.
 —, *Leucopoliis*, 108, 115, 125.
 —, — *marginatus*, 114.
marngli, *Charadrius melanops*, 141, 143.
mastersi, *Ægialitis*, 93, 96.
mathewsæ, *Ardea*, 419.
 —, — *sumatrana*, 419, 421.
 —, *Typhon sumatrana*, 419.
Mathewsia, 371, 372.
 — *collaris*, 371.
 — *rubicunda*, 371, 372, 373, 376.
 — — *argentea*, 376, 373.
 — — *rubicunda*, 373.
matook, *Ardea*, 454, 455.
mattingleyi, *Hæmatopus longirostris*, 15, 20, 21.
meadewaldoi, *Hæmatopus niger*, 27.
media, *Gallinago*, 294.
megala, *Gallinago*, 295, 300, 302, 305.
 —, *Scolopax*, 283, 293, 302, 303.
 —, *Subspilura*, 302, 300, 301.
Melanibyx, 11.
 — *ater*, 26.
 — *fuliginosus*, 26, 29.
 — *niger*, 26.
 — *unicolor*, 26.
melanogaster, *Vanellus*, 69.
melanoleuca, *Gambetta*, 198.
melanoleucus, *Totanus*, 197, 198.
melanops, *Ægialitis*, 109, 125, 137, 141.
 —, *Charadrius*, 37, 111, 112, 119, 124, 125, 137.
 —, *Elseya*, 126.
 —, — *melanops*, 137, 136.
 —, — *melanops*, 137, 141.
melanopterus, *Stephanibyx*, 60.
melanopus, *Ardea*, 424.
 —, *Herodias*, 424.
melanopygius, *Totanus*, 234.
melanorhynchus, *Spatherodia*, 400, 402.
melanorhynchus, *Numenius*, 176, 178.
 —, *Platalea*, 400.
melanura, *Limosa*, 187.
melanuroides, *Limosa*, 187.
 —, — *ægocephala*, 187.

THE BIRDS OF AUSTRALIA.

- melanuroides*, *Limosa limosa*, 187.
 —, — *melanura*, 187.
 —, *Totanus melanurus*, 187.
melodus, *Ægialitis*, 119.
 —, *Charadrius*, 109, 111, 112, 124.
melvillensis, *Ardeiralla flavicollis*, 482.
 —, *Esacus magnirostris*, 358.
 —, *Irediparra gallinacea*, 318.
Mesophoyx, 426, 422, 423, 430.
 — *intermedia*, 426.
 — — *plumifera*, 427.
 — *plumifera*, 424, 427, 428.
Mesoscolopax, 179, 168.
 — *minutus*, 180, 179.
Metopidius, 313, 314.
Micropalama, 165.
Microptera, 287.
miles, *Chettusia*, 52.
 —, *Lobibyx*, 41, 52, 64.
 —, — *miles*, 54.
 —, *Lobivanellus*, 52, 54, 55.
 —, *Tringa*, 52.
minor, *Charadrius*, 109.
 —, *Numenius*, 180.
 —, *Philohela*, 287, 293.
 —, *Scolopax*, 283, 287, 290.
minuta, *Ardetta*, 472, 473.
 —, *Limonites*, 246.
 —, *Pisobia*, 245, 250, 260, 264.
 —, *Tringa*, 247, 251, 252, 253.
minutilla, *Limonites*, 246.
 —, *Pisobia*, 246.
 —, *Tringa*, 247.
minutus, *Ixobrychus*, 472.
 —, *Mesoscolopax*, 180, 179.
 —, *Numenius*, 168, 180.
mixtus, *Erythrogonyx cinctus*, 38, 34, 35.
modestus, *Charadrius*, 37, 68.
molucca, *Ibis*, 380.
 —, *Threskiornis*, 380.
monacha, *Hiaticula*, 128.
monachus, *Ægialitis*, 128.
 —, *Charadrius*, 109, 128, 130.
mongola, *Ægialitis*, 68.
 —, *Hiaticula*, 92.
 Mongolian Sand-Dotterel, 92.
mongolians, *Charadrius*, 96.
mongolicus, *Ægialitis*, 92.
 —, *Charadrius*, 75, 82, 109, 110.
 —, *Cirrepidesmus*, 93.
 —, *Eudromias*, 93.
mongolius, *Charadrius*, 92.
mongolus, *Ægialitis*, 81, 82, 92, 93.
 —, *Charadrius*, 92, 111, 113, 114.
 —, *Cirrepidesmus*, 84, 90, 97, 102.
 —, — *mongolus*, 92, 85, 97.
 —, *Ochthodromus*, 81, 82, 93.
 —, *Pluviorhynchus*, 82, 99.
montanus, *Charadrius*, 84, 110.
 —, *Podasocys*, 68, 84, 107.
moquini, *Hæmatopus*, 27.
Morinella, 4.
 — *interpres*, 4, 5.
 — — *interpres*, 5, 10.
 — — *morinella*, 10.
 — — *oahuensis*, 5, 10.
morinella, *Arenaria*, 9.
 —, — *interpres*, 8.
 —, *Cinclus*, 5.
 —, *Morinella interpres*, 10.
Morinellus, 4, 240.
 — *australis*, 337.
morinellus, *Charadrius*, 68, 71, 111, 336.
 —, *Eudromias*, 68, 96.
Mycteria australis, 408.
Myola, 441, 436, 437, 445.
 — *pacifica*, 442, 441.
Nea, 224.
nebularia, *Tringa*, 225.
nebularius, *Glottis*, 197, 198, 224, 225.
 —, *Tringa*, 225.
neglecta, *Egretta*, 431.
 —, — *alba*, 431.
neglectus, *Esacus magnirostris*, 358.
 —, *Orthorhamphus magnirostris*, 358.
Nemoricola, 285, 287, 292.
nemoricola, *Gallinago*, 288, 292.
 —, *Scolopax*, 283, 285, 287.
neomelanotus, *Porphyrio*, 467.
Neomenius, 167.
Neopisobia, 245.
Neoscolopax, 284, 287, 288, 290.
 — *rochusseni*, 287.
Neospilura, 293.
 — *solitaria*, 293.
 New Holland Ibis, 386.
niger, *Hæmatopus*, 11, 25, 26.
 —, — *niger*, 27.
 —, *Melanibyx*, 26.
 Night-Heron, 459.
nigrifrons, *Ægialitis*, 137.
 —, *Charadrius*, 109, 111, 137.
 —, *Hiaticula*, 137.
nigripes, *Garzetta*, 424, 425.
nivigula, *Glottis*, 225.
nivosa, *Ægialitis*, 68.
nivosus, *Charadrius*, 110, 111, 112, 113.
 —, *Leucopoliis alexandrinus*, 114.
nobilis, *Gallinago*, 294.
 —, *Scolopax*, 283.
 North-Western Pied Oystercatcher, 23.
 Northern Mangrove-Bittern, 470.
 — Stone-Plover, 355.
 — White-headed Stilt, 151.
 — Yellow-necked Mangrove-Bittern, 482.
Notophoyx, 436, 437, 441, 445.
 — *flavirostris*, 446, 447.
 — *novæ-hollandiæ*, 438, 390, 436.
 — — *novæ-hollandiæ*, 438.

INDEX.

- Notophox novæ-hollandiæ parryi*, 438.
 — *pacifica*, 442.
 — — *alexandrae*, 442.
 — — *pacifica*, 442.
 — — *picata*, 446.
novæ-guineæ, *Ardea*, 454.
 — — —, *Hydralector*, 316.
 — — —, *Irediparra gallinacea*, 316.
novæ-hollandiæ, *Ardea*, 396, 436, 438, 463.
 — — —, *Burhinus*, 345.
 — — —, *Demiegretta*, 438.
 — — —, *Egretta*, 438.
 — — —, *Herodias*, 438.
 — — —, *Himantopus*, 146, 149, 160.
 — — —, *Hydralector*, 315, 316.
 — — —, *Irediparra*, 318.
 — — —, — *gallinacea*, 315, 316, 318.
 — — —, *Lobibyx*, 44, 32, 40, 41, 43, 45, 60, 64.
 — — —, *Notophox*, 438, 390, 436.
 — — —, — *novæ-hollandiæ*, 438.
 — — —, *Otis*, 363.
 — — —, *Recurvirostra*, 160, 162, 163.
 — — —, — *novæ-hollandiæ*, 160, 159.
 — — —, *Vanellus*, 44.
novæ-zelandiæ, *Charadrius*, 109, 111, 112, 124.
 — — —, *Limosa*, 192.
 — — —, — *lapponica*, 192.
 — — —, *Thinornis*, 115, 125, 126.
Numenius, 167, 166, 168.
 — *americanus*, 168.
 — *arquata*, 167, 169.
 — — *arquata*, 169.
 — — *lineata*, 169.
 — *arquatus*, 173.
 — *atricapillus*, 176, 178.
 — *australasianus*, 170, 174.
 — *australis*, 170, 174.
 — *cyanopus*, 170, 167, 168, 173, 177, 222, 226.
 — *longirostris*, 167, 168.
 — *luzoniensis*, 176.
 — *major*, 170.
 — *melanorhynchus*, 176, 178.
 — *minor*, 180.
 — *minutus*, 168, 180.
 — *phæopus*, 176.
 — — *variegatus*, 176.
 — *pusillus*, 281.
 — *rostratus*, 170, 174.
 — *rufescens*, 170, 172.
 — *takitiensis*, 176.
 — *takitiensis*, 170, 176.
 — *tenuirostris*, 168.
 — — *uropygialis*, 176, 178.
 — *variegatus*, 176, 208.
Numesius, 167.
Nycterodius, 458.
Nyctiardea, 458.
Nycticorax, 458.
 — *australasiæ*, 459.
Nycticorax caledonicus, 459.
 — — — *australasiæ*, 459, 462.
 — — — *hilli*, 459.
 — *nycticorax*, 458.
nycticorax, *Nycticorax*, 458.
oahuensis, *Morinella interpres*, 5, 10.
 —, *Tringa*, 5.
obscurus, *Charadrius*, 109.
 —, *Ochthodromus*, 81, 82.
 —, *Pluviorhynchus*, 82, 83.
occidentalis, *Charadrius*, 110, 111, 112.
 —, *Leucopoliis alexandrinus*, 114.
oceanica, *Gambetta*, 211.
oceanicus, *Hæmatopus niger*, 26.
 —, *Heteroscelus*, 212.
 —, *Totanus*, 211.
ochropus, *Actites*, 203.
 —, *Helodromus*, 203, 230, 231.
 —, *Totanus*, 192, 203.
 —, *Tringa*, 202, 203, 205.
Ochthodromus, 83.
Ochthodromus, 67, 83, 107, 109, 110, 111.
 — *asiaticus*, 82.
 — *atrifrons*, 81, 82.
 — *bicinctus*, 81, 86, 93.
 — *geoffroyi*, 71, 81, 82, 100, 115.
 — *inornatus*, 92, 100.
 — *mongolus*, 81, 82, 93.
 — *obscurus*, 81, 82.
 — *pyrrhothorax*, 81, 82, 96.
 — *veredus*, 81, 82, 104.
 — *wilsoni*, 81.
 — *wilsonius*, 68, 82, 83, 84.
Ocniscus, 464.
ocularis, *Glareola*, 321, 322.
Odura, 287.
 — *gallinago*, 287.
Odurella, 294.
Ædicnemus, 342, 343, 344.
 — *australis*, 346.
 — *giganteus*, 345.
 — *grallarius*, 345, 351, 353, 355, 356.
 — *longipes*, 345, 351, 355.
 — *magnirostris*, 345.
 — *major*, 345.
œnea, *Parra*, 314.
Ærolia, 264.
olivei, *Ardeiralla flavicollis*, 482.
 —, *Dupetor flavicollis*, 482, 478.
ophthalmicus, *Hæmatopus*, 26, 30.
 —, — *niger*, 30, 28.
 —, — *unicolor*, 27, 30.
Oreophilus, 32, 33, 68, 107.
 — *veredus*, 104.
Oriental Dotterel, 104.
 — *Pratincole*, 330.
orientalis, *Charadrius*, 75.
 —, — *pluvialis*, 75.
 —, *Cladorhynchus*, 154.

THE BIRDS OF AUSTRALIA.

- orientalis*, *Glareola*, 330, 334.
 —, *Hæmatopus*, 18.
 —, *Recurvirostra*, 154.
Orthorhamphus, 357, 342, 343.
 — *magnirostris*, 357, 358, 360.
 — — *neglectus*, 358.
osculans, *Hæmatopus*, 19, 20, 21.
 —, — *ostralegus*, 21.
Ostralega, 11.
 — *pica*, 18.
Ostralegus, 11.
 — *longirostris*, 15.
ostralegus, *Hæmatopus*, 11, 12, 13, 17, 18, 19, 20, 21, 22.
 —, — *ostralegus*, 20, 21.
Ostrelega, 11.
Otis, 336.
 — *australasianus*, 363.
 — *australis*, 363.
 — *novæ-hollandiæ*, 363.
oweni, *Gallinago australis*, 302, 305.
Oxyechus, 81, 109, 111, 112, 115, 124.
 — *tricollaris*, 115, 125.
 — *vociferus*, 68, 114.
 — (*Paroxyechus*) *placidus*, 114.
Oystercatcher, Bare-eyed Black, 30.
 —, East Australian Black, 24.
 —, North-Western Pied, 23.
 —, Pied, 15.
 —, Westralian Black, 29.

pacifica, *Ardea*, 436, 442.
 —, *Myola*, 442, 441.
 —, *Notophox*, 442.
 —, — *pacifica*, 442.
 —, *Scolopax*, 211.
pacificus, *Cypselus*, 327.
 —, *Totanus*, 211.
Pagoa, 98, 82.
 — *geoffroyi*, 99, 82, 83, 98, 102, 208, 222, 295.
Pagolla, 83.
 Pale Red-capped Dotterel, 121.
pallida, *Ægialitis*, 115.
pallidus, *Charadrius*, 111, 112.
 —, *Leucopoliis marginatus*, 114.
palmatius, *Himantopus*, 154, 156.
paludosa, *Xylocota*, 286.
pannosa, *Herodias*, 123.
paraguayæ, *Gallinago*, 294.
Parascolopax, 290, 291.
pardela, *Charadrius*, 69.
Paroxyechus, 114.
Parra, 312, 316.
 — *ænea*, 314.
 — *africana*, 314.
 — *cristata*, 314.
 — *gallinacea*, 314, 315, 316, 318.
 — *indica*, 314.
 — *ludoviciana*, 54.
parryi, *Notophox novæ-hollandiæ*, 438.

pectoralis, *Charadrius*, 59, 64.
 —, *Chettusia (Lobivanellus)*, 59.
 —, *Cladorhynchus*, 154.
 —, *Himantopus*, 154.
 —, *Hoplopterus*, 59.
 —, *Leptorhynchus*, 154, 156.
 —, *Leucopoliis (Helenægialis)*, 114, 126.
 —, *Limnocinclus*, 254, 262, 263.
 —, *Lobivanellus*, 59.
 —, *Sarciophorus*, 59, 64.
 —, *Tringa*, 256, 260, 261.
 —, — *acuminata*, 259.
 —, *Xiphidiorhynchus*, 154.
pecuaria, *Ægialitis*, 115.
pecuarius, *Charadrius*, 110, 111, 112, 113, 114.
pedestris, *Totanus*, 207.
Pelidna, 175, 246, 264, 274.
 — *acuminata*, 255.
 — *subarquata*, 266.
Pelorychus, 285, 287.
Pelorynchus, 285.
Peltohyas, 335, 68.
 — *australis*, 335, 337, 339.
 — — *australis*, 337.
 — — *whitlocki*, 339, 337.
 — (*Eudromias*) *australis*, 341.
perciloptera, *Ardea*, 486.
peregrina, *Ibis*, 394.
peregrinus, *Plegadis falcinellus*, 394.
Pernettya, 114.
peroni, *Ægialitis*, 115.
 —, *Charadrius*, 110, 111, 112, 113.
 —, *Leucopoliis*, 114.
personata, *Chettusia*, 52.
personatus, *Lobibyx miles*, 52, 43, 54, 55.
 —, *Lobivanellus*, 45, 52, 54.
Phæopus, 175, 168.
 — *borealis*, 169.
 — *hudsonicus*, 169.
 — *phæopus*, 175.
 — — *phæopus*, 169.
 — *tahitiensis*, 169.
 — *variegatus*, 222.
phæopus, *Numenius*, 176.
 —, *Phæopus*, 175.
 —, — *phæopus*, 169.
Philohela, 284, 287, 288, 290.
 — *minor*, 287, 293.
Philolimnos, 285, 287.
picata, *Agamia*, 446.
 —, *Ardea*, 436, 446, 447.
 —, — (*Herodias*), 446.
 —, *Herodias*, 446.
 —, *Notophox*, 446.
picatus, *Hæmatopus*, 18, 23.
 —, — *ostralegus*, 23, 14, 21.
 —, *Himantopus*, 150.
picta, *Ostralega*, 18.
 Pied Egret, 446.
 — *Oystercatcher*, 15.

INDEX.

- Pisobia*, 245, 246, 259.
 — *acuminata*, 246.
 — *aurita*, 246, 256, 259.
 — *bairdi*, 246.
 — *damacensis*, 251, 246, 264.
 — *fuscicollis*, 245, 246.
 — *maculata*, 246, 261.
 — — *acuminata*, 256, 259.
 — *minuta*, 245, 250, 260, 264.
 — — *ruficollis*, 247, 222, 248.
 — *minutilla*, 246.
 — *ruficollis*, 71, 122, 248, 249.
 — *temminckii*, 245.
placida, *Ægialitis*, 114.
placidus, *Charadrius*, 109, 111, 112, 113.
 —, *Oxyechus* (*Paroxyechus*), 114.
Planorhamphus, 344.
Platalea, 398, 399.
 — *flavipes*, 404.
 — — *flavipes*, 404.
 — — *whitei*, 404, 406.
 — *melanorhynchus*, 400.
 — *regia*, 400.
 — — *regia*, 400.
 — — *stalkerii*, 400.
Plateibis, 403.
 — *flavipes*, 404.
Platibis, 403, 398.
 — *flavipes*, 404, 401, 403.
Platyramphus, 278.
platyrhyncha, *Limicola*, 279, 281.
platyrhynchus, *Tringa*, 279.
Plegadis, 392, 378, 393.
 — *falcinellus*, 392, 394.
 — — *peregrinus*, 394.
Plegadornis, 392.
 Plover, Australian Long-billed, 358.
 —, Black-breasted, 59.
 —, Bridled, 350.
 —, Chestnut-breasted, 86.
 —, Eastern Golden, 74.
 —, — Grey, 69.
 —, — Masked, 55.
 —, Great-billed, 350.
 —, High-legged, 350.
 —, Lesser Masked, 52.
 —, Little Stone-, 353.
 —, Northern Stone-, 355.
 —, Spur-winged, 44.
 —, Stone-, 345.
 —, Western Black-breasted, 65.
 —, — Stone-, 356.
 Plumed Egret, 427.
plumifera, *Ardea*, 427.
 —, *Egretta*, 427.
 —, — *intermedia*, 427.
 —, *Mesophox*, 423, 426.
 —, — *intermedia*, 427.
plumiferus, *Herodias*, 427.
Pluvialis, 73, 4, 67, 68, 81, 107, 109.
Pluvialis apricarius, 70, 73, 79, 125.
 — *dominicus*, 79.
 — — *fulvus*, 74, 70, 80.
 — *fulvus*, 75.
 — *longipes*, 75.
 — *taitensis*, 75.
 — *xanthocheilus*, 75, 104.
pluvialis, *Charadrius*, 68, 74, 125.
Pluvianellus, 68.
Pluvianus lobatus, 45.
Pluviorhynchus, 109.
 — *mongolus*, 82, 99.
 — *obscurus*, 82, 83.
Podasocys, 81, 109, 110, 111.
 — *montanus*, 68, 84, 107.
poeciloptila, *Botaurus*, 486.
poeciloptilus, *Botaurus*, 486, 489.
poicilopterus, *Botaurus*, 486.
poiciloptila, *Ardea*, 486.
poiciloptilus, *Botaurus*, 486.
 —, — *poiciloptilus*, 486, 485, 489.
polynesia, *Totanus*, 211.
Polyptila, 287.
Porphyrio neomelanotus, 467.
Pratincola, 329, 336.
pratincola, *Glareola*, 329, 330.
 Pratincole, Australian, 324.
 —, Coromandel, 330, 334.
 —, Madras, 330, 334.
 —, Maldivian, 330, 334.
 —, Oriental, 330.
Prohæmatopus, 12.
Pseudototanus, 191.
Pterodroma, 98.
Puffinus, 98.
pulverulenta, *Gambetta*, 207.
pulverulentus, *Actitis*, 207, 211.
 —, *Gambetta*, 207.
 —, *Totanus* 207, 210.
pusilla, *Ardea*, 473.
 —, *Ardeola*, 473.
 —, *Ardetta*, 473.
 —, *Botaurus minutus*, 473.
 —, *Tringa*, 247.
pusillus, *Ixobrychus minutus*, 473.
 —, *Numenius*, 281.
pygmæa, *Tringa* (*Limicola*), 279.
pyrrhothorax, *Charadrius*, 92, 96, 97.
 —, *Cirripidesmus*, 82, 83.
 —, *Ochthodromus*, 81, 82, 96.

queenslandicus, *Esacus magnirostris*, 358.
quoyi, *Hæmatopus*, 12.

ramsayi, *Burhinus magnirostris*, 355, 351.
rectirostris, *Ardea*, 414, 416, 417, 419, 421.
 —, — *cinerea*, 414.
Recurvirostra, 158, 144, 153.
 — *americana*, 161, 162.

THE BIRDS OF AUSTRALIA.

- Recurvirostra andina*, 162.
 — *avosetta*, 158.
 — *leucocephala*, 154.
 — *novæ-hollandiæ*, 160, 162, 163.
 — — *novæ-hollandiæ*, 160, 159.
 — — *stalkerii*, 163, 159, 160.
 — *orientalis*, 154.
 — *ruficollis*, 160, 162.
recurvirostra, *Limosa*, 221.
 Red-capped Dotterel, 117.
 — -kneed Dotterel, 35.
 — Mangrove-Bittern, 471.
 Reef-Heron, Blue, 450.
 — - —, White, 456.
regia, *Platibis*, 400.
 —, — *regia*, 400.
 —, *Spatherodia*, 400, 398.
reischeki, *Hæmatopus*, 19, 22.
Rhimphalea, 323.
 — *isabella*, 324.
Rhinoptilus, 321, 336.
Rhynchæa, 306.
Rhyacophilus, 229, 175, 198.
 — *affinis*, 230.
 — *glareola*, 229.
 — — *affinis*, 230, 205.
Rhynchæa, 306.
 — *australis*, 308.
Rhynchæna, 306.
Rhynchea, 306.
Rhynchina, 306.
Rhynchophilus, 229.
Rhynchosimus, 220.
 — *cinereus*, 221.
Rhyocophilus, 229.
Rogibyx, 41.
 — *tricolor*, 41.
rochusseni, *Neoscolopax*, 287.
 —, *Scolopax*, 283, 287, 290.
rogersi, *Butorides*, 471, 464, 465, 466.
 —, *Canutus canutus*, 270, 271.
 —, *Toburides*, 471.
 —, *Xenorhynchus asiaticus*, 408.
rosenbergi, *Scolopax*, 290.
Rostratula, 306, 307.
 — *australis*, 308.
 — — *fitzroyi*, 308.
 — *capensis*, 306.
 — — *australis*, 308.
rostratus, *Numenius*, 170, 174.
rothschildi, *Irediparra gallinacea*, 318, 316.
rotnesti, *Cladorhynchus leucocephalus*, 154.
rubricollis, *Charadrius*, 130.
rubicunda, *Antigone*, 373.
 —, *Ardea*, 371, 372, 373, 375.
 —, *Mathewsia*, 371, 372, 373, 376.
 —, — *rubicunda*, 373.
rubida, *Arenaria leucophæa*, 244.
rubicollis, *Himantopus*, 160.
rufa, *Limosa*, 192.
rufescens, *Burhinus magnirostris*, 353, 352.
 —, *Numenius*, 170, 172.
 —, *Tringa*, 255.
ruficapilla, *Hiaticula*, 117.
ruficapillus, *Ægialitis*, 93, 110, 117, 121, 249.
 —, *Ægialophilus*, 117.
 —, *Charadrius*, 110, 111, 112, 113, 117, 118, 121.
 —, — *ruficapillus*, 117.
 —, *Leucopoliis*, 114.
 —, — *ruficapillus*, 117, 116.
ruficollis, *Actodromus*, 247.
 —, *Limonites*, 74, 80, 246, 247.
 —, *Pisobia*, 71, 122, 248, 249.
 —, — *minuta*, 247, 222, 248.
 —, *Recurvirostra*, 160, 162.
 —, *Tringa*, 247, 251.
 —, — *minuta*, 247.
 —, *Trynga*, 247.
rufinellus, *Charadrius*, 97.
rufinus, *Charadrius*, 99.
rufiventer, *Charadrius*, 35.
 —, *Vanellus*, 35, 37.
rufiventris, *Erythrogonyx*, 35.
rufus, *Canutus canutus*, 273.
russata, *Elseya melanops*, 141, 136.
russatus, *Charadrius*, 141, 142.
Rusticola, 284, 287.
rusticola, *Scolopax*, 283, 284, 287, 288, 290, 307.
sabinii, *Enalius*, 285, 286.
 —, *Scolopax*, 285.
 —, *Xylocota*, 285.
sacra, *Ardea*, 453, 454, 456.
 —, *Demiegretta*, 450, 453, 456.
 —, *Demigretta*, 448, 450.
 Sacred Heron, 453.
salina, *Actodromus*, 251.
 —, *Tringa*, 247, 251.
 —, *Trynga*, 247.
sanctæhelenæ, *Ægialitis*, 115.
 —, *Charadrius*, 110, 111, 112, 113, 114.
 —, *Leucopoliis* (*Helenægialis*), 114, 126.
 Sand-Dotterel, Large, 99.
 — - —, Mongolian, 92.
 Sanderling, Eastern, 241.
 Sandpiper, Eastern Broad-billed, 279.
 —, — Common, 216.
 —, — Curlew-, 266.
 —, — Green, 203.
 —, — Terek, 221.
 —, — Wood-, 230.
 —, Grey-rumped, 207.
 —, Long-tailed, 234.
sanguineus, *Charadrius*, 92.
Sarciophorus, 57.
 — *pectoralis*, 59, 64.
 — *tricolor*, 59.
Sarcogrammus, 40.
saturata, *Scolopax*, 283, 290.

INDEX.

- Schoeniclus albescens*, 247.
 — *australis*, 255.
 — *chinensis*, 266.
 — *magnus*, 275, 276, 277.
 — *subarquata*, 266.
Scolopax, 283, 284, 287, 288, 289, 290, 291, 293, 306.
 — *æquatorialis*, 283.
 — *aucklandica*, 283.
 — *australis*, 283, 293, 296, 299, 308.
 — *brehmii*, 285.
 — *falcinellus*, 281.
 — *frenata*, 283.
 — *gallinago*, 283, 287, 288, 289.
 — *gallinula*, 283, 285, 286, 287, 289, 290, 293, 294.
 — *gigantea*, 283.
 — *hardwickii*, 293, 296.
 — *imperialis*, 283.
 — *incana*, 211.
 — *jamesoni*, 283.
 — *lapponica*, 184, 185, 191.
 — *luzoniensis*, 176, 178.
 — *macrodactyla*, 283.
 — *major*, 283.
 — *megala*, 283, 293, 302, 303.
 — *minor*, 283, 287, 290.
 — *nemicola*, 283, 285, 287.
 — *nobilis*, 283.
 — *pacifica*, 211.
 — *rochusseni*, 283, 287, 290.
 — *rosenbergi*, 290.
 — *rusticola*, 283, 284, 287, 288, 290, 307.
 — *sabinii*, 285.
 — *saturata*, 283, 290.
 — *solitaria*, 283, 292.
 — *solitarius*, 211.
 — *stenura*, 283, 285, 287, 289, 293.
 — *stricklandi*, 283.
 — *sumatrana*, 221.
 — *undulata*, 211, 283, 285, 286, 287, 291.
 — *wilsoni*, 283.
 — (*Spilura*) *stenura*, 302.
Scotæus, 458.
seebohmi, *Himantopus*, 146, 150.
semipalmata, *Ægialitis*, 68, 95.
semipalmatus, *Charadrius*, 109, 111, 112, 123, 124.
 —, *Totanus*, 212.
 Sharp-tailed Stint, 255.
sibirica, *Limicola*, 279.
 —, — *falcinellus*, 279.
Simorhynchus, 220.
 Snipe, Australian Painted, 308.
 —, East Australian, 296.
 —, Larger Pin-tailed, 302.
 Snipes and Woodcocks, 283.
sociabilis, *Charadrius*, 68.
solitaria, *Gallinago*, 289.
 —, *Neospilura*, 293.
solitaria, *Scolopax*, 283, 292.
 —, *Spilura*, 286.
solitarius, *Scolopax*, 211.
 —, *Totanus*, 211.
sonneratii, *Charadrius*, 92.
Spatherodia, 398, 399, 402, 403.
 — *flavipes*, 404.
 — *melanorhynchos*, 400, 402.
 — *regia*, 400, 398.
Spilura, 286, 287, 292, 295, 300.
 — *horsfieldii*, 286.
 — *solitaria*, 286.
 — *stenura*, 286, 292.
spinicollis, *Carphibis*, 386, 385, 390.
 —, *Geronticus*, 382, 386, 390, 405.
 —, — *spinicollis*, 386.
 —, *Ibis*, 386.
 Spoonbill, Black-billed, 400.
 —, Yellow-billed, 404.
 Spur-winged Plover, 44.
Squatarola, 67.
Squatarola, 67, 4, 73.
 — *australis*, 69.
 — *helvetica*, 69.
 — — *australis*, 69.
 — *squatarola*, 67, 68, 69, 70, 222.
 — — *hypomelus*, 69.
squatarola, *Charadrius*, 69, 71, 72.
 —, — (*Squatarola*), 69.
 —, *Squatarola*, 67, 68, 69, 70, 222.
Squatarolla, 67.
Squaterola, 67.
stagnatilis, *Ardea*, 466.
 —, — *striata*, 466.
 —, *Ardetta*, 466.
 —, *Ardette*, 466.
 —, *Butorides*, 466, 481.
 —, — *javanica*, 466.
 —, — *striata*, 466, 465.
 —, *Iliornis*, 197, 198.
 —, *Totanus*, 197, 198, 200, 277.
 —, *Tringa*, 200.
stalkerii, *Platalea regia*, 400.
 —, *Recurvirostra novæ-hollandiæ*, 163, 159, 160.
stellaris, *Botaurus*, 484.
stenoptera, *Telmatias*, 284.
stenura, *Gallinago*, 295, 302.
 —, *Scolopax*, 283, 285, 287, 289, 293.
 —, — (*Spilura*), 302.
 —, *Spilura*, 286, 292.
Stephanibyx melanopterus, 60.
 Stilt, Banded, 154.
 —, Little, 247.
 —, Long-toed, 251.
 —, Northern White-headed, 151.
 —, Sharp-tailed, 255.
 —, White-headed, 146.
Stiltia, 323, 321, 329, 336.
 — *grallaria*, 324.

THE BIRDS OF AUSTRALIA.

- Stiltia isabella*, 324, 322, 323, 328, 332.
 Stone-Plover, 345.
 ———, Little, 353.
 ———, Northern, 355.
 ———, Western, 356.
 Stork, Black-necked, 408.
 Straw-necked Ibis, 386.
Strepsilas, 4.
 ——— *interpres*, 5.
striata, *Ardea*, 467.
stricklandi, *Gallinago*, 288, 291.
 ———, *Scolopax*, 283.
 ———, *Xylocota*, 286.
strictipennis, *Geronticus*, 380.
 ———, *Ibis*, 380.
 ———, ——— *molucca*, 380.
 ———, *Threskiornis*, 380, 382, 387.
 ———, ——— *molucca*, 380.
Stripsilas, 4.
sturmi, *Ardeiralla*, 477.
subarquata, *Pelidna*, 266.
 ———, *Schœniclus*, 266.
 ———, *Tringa*, 266.
subarquatus, *Ancylochilus*, 266.
Subglareola, 321.
subminuta, *Actodromus*, 251.
 ———, *Tringa*, 251, 252, 253.
Subspilura, 300, 295.
 ——— *megala*, 302, 300, 301.
sumatrana, *Ardea*, 419, 421.
 ———, ——— *sumatrana*, 421.
 ———, *Scolopax*, 221.
 ———, *Typhon*, 418.
syrmatophora, *Ardea*, 431.
 ———, *Egretta*, 431.
 ———, *Herodias*, 424.
 ———, ——— *alba*, 431, 428.
syrmatophorus, *Egretta alba*, 431.
 ———, *Herodias*, 431, 435.

takitiens, *Numenius*, 176.
takitiensis, *Numenius*, 170, 176.
 ———, *Phœopus*, 169.
taitensis, *Charadrius*, 74.
 ———, *Pluvialis*, 75.
Tantalides, 392.
Tantalus falcinellus, 397.
 ——— *ibis*, 379.
 ——— *variegatus*, 176, 178.
 Tattler, Wandering, 211.
Telmatias, 284, 287.
 ——— *gallinago*, 284, 285.
 ——— *stenoptera*, 284.
temminckii, *Limonites*, 246.
 ———, *Pisobia*, 245.
 ———, *Tringa*, 247, 253.
tenellus, *Charadrius*, 110.
tenuirostris, *Anteliotringa*, 275, 276.
 ———, *Numenius*, 168.
 ———, *Totanus*, 274, 275, 277.

tenuirostris, *Tringa*, 275.
 ———, *Zarapita*, 168, 169.
Terekia, 165, 220.
 ——— *cinerea*, 208, 221.
 ——— *javanica*, 221.
terekius, *Totanus*, 221.
Thereschiornis, 378.
Thinornis, 108, 109, 124, 135.
 ——— *novæ-zelandiæ*, 115, 125, 126.
Threskiornis, 378, 379, 385, 392, 393.
 ——— *æthiopicus*, 378, 379.
 ——— *falcinellus*, 379.
 ——— *molucca*, 380.
 ——— ——— *strictipennis*, 380.
 ——— *strictipennis*, 380, 382, 387.
Timeta, 153, 156.
timorensis, *Hypsibates leucocephalus*, 150.
timoriensis, *Herodias*, 428, 431, 434.
 ———, ——— *alba*, 431.
Toburides, 464.
 ——— *rogersi*, 471.
Tonophoyx, 445, 436, 437, 441.
 ——— *aruensis*, 445.
 ——— ——— *flavirostris*, 446.
torbayi, *Charadrius cucullatus*, 133, 134.
tormenti, *Charadrius ruficapillus*, 117, 121.
 ———, *Demigretta*, 450.
 ———, ——— *sacra*, 450.
 ———, *Leucopoliis ruficapillus*, 121, 116.
torquata, *Antigone*, 371.
 ———, *Glareola*, 330.
totanirostris, *Charadrius*, 68.
Totanus, 165, 197, 198, 199, 200, 223, 224, 264.
 ——— *acuminatus*, 255.
 ——— *affinis*, 230.
 ——— *australis*, 296.
 ——— *bartrami*, 235.
 ——— *bartramia*, 234.
 ——— *bartramius*, 234.
 ——— *brevipes*, 207, 211.
 ——— *calidris*, 197.
 ——— *canescens*, 225.
 ——— *cinereus*, 221.
 ——— *damacensis*, 245, 251.
 ——— *empusa*, 216.
 ——— *flavipes*, 197, 199.
 ——— *fuliginosus*, 211.
 ——— *fusca*, 197.
 ——— *fuscus*, 198.
 ——— *glareola*, 230.
 ——— *glottis*, 225, 231.
 ——— *glottoides*, 225.
 ——— *griseopygius*, 207, 210.
 ——— *gryseopygus*, 207.
 ——— *horsfieldii*, 200.
 ——— *hypoleucus*, 197, 216.
 ——— *incanus*, 207, 211.
 ——— ——— *brevipes*, 208.
 ——— *javanicus*, 221.
 ——— *lathamii*, 200.

INDEX.

- Totanus leucurus*, 203.
 — *longicauda*, 234.
 — *macularius auratus*, 216.
 — *melanoleucus*, 197, 198.
 — *melanopygius*, 234.
 — *melanurus melanuroides*, 187.
 — *nebularius*, 225.
 — — *glottoides*, 225.
 — *oceanicus*, 211.
 — *ochropus*, 197, 203.
 — *pacificus*, 211.
 — *pedestris*, 207.
 — *polynesia*, 211.
 — *pulverulentus*, 207, 210.
 — *rufa uropygialis*, 193.
 — *semipalmatus*, 212.
 — *solitarius*, 211.
 — *stagnatilis*, 197, 198, 200, 277.
 — *tenuirostris*, 274, 275, 277.
 — *terekius*, 221.
 — *undulatus*, 211.
 — *variegatus*, 234.
Trachelia, 329.
 — *maldivarum*, 330.
 — *pratincola maldivarum*, 330.
tregellasi, *Charadrius cucullatus*, 133, 127.
tricoloris, *Afroxyechus*, 126.
 —, *Charadrius*, 109, 111, 112, 124.
 —, *Oxyechus*, 115, 125.
tricolor, *Charadrius*, 41, 59, 64.
 —, *Hoplopterus*, 59.
 —, *Rogibyx*, 41.
 —, *Sarciophorus*, 59.
 —, *Vanellus*, 41.
 —, *Xiphidiopterus*, 41.
 —, *Zonifer*, 47, 57, 59, 63, 64, 65.
 —, — *tricolor*, 59, 58.
tridactyla, *Arenaria leucophæa*, 241, 244.
 —, *Tringa*, 241.
Tringa, 202, 215, 229, 249, 269.
 — *acuminata*, 255, 258, 259, 260.
 — — *pectoralis*, 259.
 — *albescens*, 247.
 — *alpina*, 274.
 — *aurita*, 216, 218, 258.
 — *australis*, 255.
 — *autumnalis*, 396.
 — *bairdi*, 261.
 — *bonapartei*, 246.
 — *brevipes*, 207, 208.
 — *canutus*, 270, 274.
 — *cinclus*, 242.
 — *cinerea*, 221.
 — *crassirostris*, 255, 274, 275, 276, 277.
 — *damacensis*, 247, 251.
 — *glareola*, 230.
 — *hypoleucos*, 216.
 — *hypoleucus*, 216.
 — *incanus*, 211, 212.
 — *leucophæa*, 243.
Tringa littorea, 230.
 — *lobata*, 44, 50, 51.
 — *longicauda*, 234.
 — *maculata*, 261.
 — *magna*, 275.
 — *miles*, 52.
 — *minuta*, 247, 251, 252, 253.
 — — *ruficollis*, 247.
 — *minutilla*, 247.
 — *nebularia*, 225.
 — *nebularius*, 225.
 — *oahuensis*, 5.
 — *ochropus*, 202, 203, 205.
 — — *assami*, 203.
 — *ocrophus*, 205.
 — *pectoralis*, 256, 260, 261.
 — *platyrhynchus*, 279.
 — *pusilla*, 247.
 — *rufescens*, 255.
 — *ruficollis*, 247, 251.
 — *salina*, 247, 251.
 — *stagnatilis*, 200.
 — *subarquata*, 266.
 — *subminuta*, 251, 252, 253.
 — *temminckii*, 247, 253.
 — *tenuirostris*, 275.
 — *tridactyla*, 241.
 — (*Calidris*) *arenaria*, 241.
 — (*Limicola*) *pygmæa*, 279.
 — (*Pelidna*) *chinensis*, 266.
 — (*Terekia*) *cinerea*, 221.
Tringoides, 214.
 — *bartramius*, 234.
 — *empusa*, 216.
 — *hypoleucus*, 216.
Trygoides, 214.
Trynga, 202.
 — *alba*, 243.
 — *glareola*, 207.
 — *leucoptera*, 216.
 — *ruficollis*, 247.
 — *salina*, 247.
Tryngas, 202.
Tryngodes, 214.
 Turnstone, Eastern, 5.
Typhon, 418, 422, 426.
 — *sumatrana*, 418.
 — — *mathewsæ*, 419.
undulata, *Gallinago*, 286, 288, 292.
 —, *Scolopax*, 211, 283, 285, 286, 287, 291.
 —, *Xylocotæ*, 285, 286.
undulatus, *Totanus*, 211.
unicolor, *Hæmatopus*, 22, 24, 26, 27, 29.
 —, — *niger*, 28.
 —, *Melanibyx*, 26.
Uroæetus audax, 47.
uropygialis, *Limosa*, 192.
 —, — *lapponica*, 193.
 —, — *rufa*, 193.

THE BIRDS OF AUSTRALIA.

- uropygialis*, *Numenius*, 176, 178.
 —, *Totanus rufa*, 193.
- vanelloides*, *Charadrius*, 59, 64.
Vanellus, 32, 68.
 — *cinctus*, 35, 37.
 — *cristatus*, 71.
 — *galinaceus*, 44.
 — *gallinaceus*, 44.
 — *lateralis*, 41.
 — *melanogaster*, 69.
 — *novæ-hollandiæ*, 44.
 — *rufiventer*, 35, 37.
 — *tricolor*, 41.
 — *vanellus*, 41, 125.
vanellus, *Vanellus*, 41, 125.
variegata, *Erolia*, 265.
variegatus, *Numenius*, 176, 208.
 —, — *phæopus*, 176.
 —, *Phæopus*, 222.
 —, *Tantalus*, 176, 178.
 —, *Totanus*, 234.
venustus, *Charadrius*, 111, 112, 113.
 —, *Leucopoliis*, 114.
vereda, *Eupoda*, 104, 82, 83, 84.
veredus, *Ægialitis*, 104.
 —, *Charadrius*, 68, 83, 84, 104.
 —, *Eudromias*, 104.
 —, *Ochthodromus*, 81, 82, 104.
 —, *Oreophilus*, 104.
verginicus, *Charadrius*, 68.
Vetola, 191, 264.
 — *lapponica*, 191, 196.
 — *baueri*, 192, 196.
vigorsii, *Glottis*, 225.
virginianus, *Charadrius*, 75.
virginicus, *Charadrius*, 68.
vociferus, *Charadrius*, 68, 109, 111, 112, 113.
 —, *Oxyechus*, 68, 114.
- Wandering Tattler, 211.
 West Australian Bittern, 489.
 — — Crane, 376.
 Western Black-breasted Plover, 65.
 — — -fronted Dotterel, 141.
 — Bustard, 368.
 — Comb-crested Jacana, 318.
 — Dotterel, 339.
 — Hooded Dotterel, 133.
 — Red-kneed Dotterel, 38.
 — — -necked Avocet, 163.
 — Stone-Plover, 356.
westralensis, *Botaurus poiciloptilus*, 489, 485.
 Westralian Black Oystercatcher, 29.
 Whimbrel, Australian, 176.
- Whimbrel, Little, 180.
 White Egret, 431.
 — Ibis, 380.
 — Reef-Heron, 456.
 — -fronted Heron, 438.
 — -headed Stilt, 146.
 — -necked Heron, 442.
whitei, *Platalea flavipes*, 404, 406.
whitlocki, *Charadrius australis*, 339.
 —, *Peltohyas australis*, 339, 337.
wilsoni, *Charadrius*, 83, 110.
 —, *Ochthodromus*, 81.
 —, *Scolopax*, 283.
wilsonius, *Ochthodromus*, 68, 82, 83, 84.
 Woodcocks and Snipes, 283.
 Wood-Sandpiper, Eastern, 230.
- xanthocheilus*, *Charadrius*, 74, 104, 107.
 — *Pluvialis*, 75, 104.
Xanthocnus, 476.
 — *gouldi*, 479.
Xenorhynchus, 407.
 — *asiaticus*, 407, 408.
 — — *australis*, 408.
 — — *rogersi*, 408.
 — *australis*, 408.
Xenos, 220.
Xenus, 220.
 — *cinereus*, 220, 221.
 — — *javanicus*, 221.
 — *javanicus*, 220.
Xiphidiopterus, 40.
 — *cucullatus*, 41.
 — *tricolor*, 41.
Xiphidiorhynchus, 153, 156.
 — *pectoralis*, 154.
Xylocota, 285, 286, 287, 291.
 — *gigantea*, 286.
 — *imperialis*, 286.
 — *jamesoni*, 285, 286, 291.
 — *paludosa*, 286.
 — *sabini*, 285.
 — *stricklandi*, 286.
 — *undulata*, 285, 286.
- Yellow-billed Spoonbill, 404.
 — -necked Mangrove-Bittern, 479.
- Zarapita*, 168.
 — *tenuirostris*, 168, 169.
Zonibyx, 68, 107, 109.
Zonifer, 57, 41.
 — *tricolor*, 47, 57, 59, 63, 64, 65.
 — — *gwendolenæ*, 65, 58, 59.
 — — *tricolor*, 59, 58.

SMITHSONIAN INSTITUTION LIBRARIES



3 9088 01571 2292

